



Best Practices for Community Health Information Exchange

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Preface

Leigh Burchell

Leigh Burchell is the Director of the Center for Community Health Leadership.

When the Center for Community Health Leadership was established, one of its first initiatives was to create a thought leadership series focused on encouraging the collaboration and providing the guidance necessary to build successful, sustainable community health information exchanges (HIEs). Our guiding principle for the series is that a win-win HIE is not only attainable, but can show a measurable return as long as it is built to address and accommodate the views of diverse audiences.

The framework for this series, *Top Ten Success Factors for Community HIE*, provides guidelines for the creation of a community-based data exchange. Each success factor represents a pivotal point on the path to achieving community-wide information exchange. The *Best Practices for Community Health Information Exchange* then expands these success factors, offering prescriptive guidance to carry communities along that path.

The first half of the *Best Practices for Community Health Information Exchange* lays the groundwork for transforming the concept of HIE into reality:

“Value Propositions for Community Health Information Exchange: Many Voices, One Vision” focuses on the importance of constructing an HIE in a way that accounts for and serves the individual needs of each stakeholder group, while still allowing them to share collectively in the benefits. A typical community will include healthcare organizations of various forms, including physician practices, hospitals, health systems, and long-term and home-care agencies, as well as individual providers, patients, payers and employers. Identifying the value propositions of each of these stakeholder groups creates the foundation upon which the plan for the community HIE should be developed. In other words, the success of a community-based exchange project is as much a feat of cooperation as it is one of technology.

“Common Goals for the Community HIE: Building a Roadmap” provides guidance on reaching consensus on a community vision and purpose and developing a set of goals to achieve them—both of which are critical elements of HIE success. A defined communal vision is essential to this stage and must reflect the overarching goals, consensus on priorities of community benefit, areas of potential conflict and areas of agreement related to the overall good for the community as a whole without forgetting the return expected by individual constituencies. This allows the establishment of goals that transcend differences between stakeholder expectations and place the focus on priorities that will benefit the community and serve as guardrails throughout the process.

“Staying on Track: Facilitating an Ongoing Discourse Among Stakeholders” stresses the importance of helping area participants remain focused and engaged as obstacles are encountered through a variety of mechanisms that encourage ongoing communication. Recruiting a strong leader who is capable of championing the HIE to the community, driving organizational progress and attending to disruptions that can threaten the initiative’s forward momentum is critical. The establishment of an Executive Steering Committee that is empowered to solicit input from top stakeholders is also wise, as the group will make decisions related to the creation of a framework for a well-articulated governance structure. As part of this process, the leadership should also conduct proactive, targeted outreach to ensure stakeholders are aware they have a forum wherein their issues and concerns will be heard and addressed, helping to solidify the collaborative spirit required to carry the initiative forward.

“Stakeholder Engagement: Transparency as a Retention Strategy” emphasizes taking a proactive, open approach to communication in order to maintain stakeholder engagement and help ensure financial sustainability and ongoing collaboration. Challenges are an inevitable part of any complicated process, including the creation of an HIE, but an open communication mechanism created early in recognition of that fact is one means of retaining commitment even during times of frustration. A transparent process that continually educates and seeks feedback from the area participants is capable of mitigating the impact of impediments that can weaken stakeholder commitment and ultimately contributes to the long-term success of the initiative.

“Establishing Governance: Focus on Sustainability and Community Inclusion” offers practical advice on creating an inclusive, neutral community-based governance structure capable of making the business decisions necessary to take the HIE from concept to reality. The strongest governance structures are simple, effective and adaptable, ensure the involvement of all constituencies in the process to foster a sense of engagement, and ultimately can help shape the long-term business model upon which the information exchange is built. Clearly defined policies, a committee structure that encourages outreach and a decision-making process with aligned stakeholder incentives are also key.

The second half provides actionable strategies for how to effectively use and build upon the foundation for health information exchange established in Chapters 1 through 5:

“A Practical Roadmap: Charting Milestones to Demonstrate Success for Sustained Community Buy-In” describes the four-step process of creating a community roadmap, which provides an initiative’s leadership with strategic and tactical direction to identify and manage shared goals related to community and stakeholder objectives. It also arms the leadership with tools to overcome the cultural issues and barriers that can impede forward progress. Consisting of well-defined, measurable milestones for clinical data exchange, the roadmap is the foundation of a formal plan of execution. It solidifies community buy-in, secures ongoing stakeholder support, ensures relevance and demonstrates the value of HIE through tangible results and milestones that clearly convey success.

“Adopting a Business Mentality: A Sustainable Model for Long-Term Success” stresses the critical importance of a solid, sustainable business model for the long-term viability of any HIE. There may not be a “one-size-fits-all” business model for HIE, however there are several that have established a track record of success, which are discussed. A practical strategy is also laid out for developing an appropriate, successful business model. This includes assessing the environment in which the initiative will operate, establishing a realistic budget that includes anticipated revenues, operating expenses and consideration for appropriate levels of marketing, and planning for ongoing financial support after initial funding has dried up. Developing a sustainable business model is one of the most difficult tasks leaderships face, but it is one that is imperative for long-term stability and success.

“Achieving Expectations: Negotiating and Executing Effective Vendor Contracts” outlines the process defining and negotiating the array of policies, contracts and agreements that can mean the difference between a financially sustainable initiative and one challenged by red ink and missed deadlines. Governing everything from deliverables and data access to participation, these formal agreements also clarify expectations and divide accountability equally among stakeholders and participants. In addition to an overview of the most important agreement, strategies are provided for selecting and negotiating iron-clad contracts with the right vendors. Suggestions are also offered on how to take advantage of group purchasing opportunities or economies of scale that may be available to the HIE by leveraging the buying power of stakeholders, partnerships and alliances.

“New Haven: Scanning the Environment to Capitalize on Emerging Opportunities” examines how an emerging initiative has put into practice many of the recommendations conveyed in this series. New Haven’s initiative started with an environmental scan of the political, social and economic interests within the community to gain a comprehensive understanding of the available

resources and of the community's topography to ensure that those resources could be leveraged to the benefit of all stakeholders. They also performed targeted value creation to broaden the participant pool and maximize available resources. Finally, the leadership took advantage of the experiences of other communities that have gone through the process of establishing a working HIE to help navigate issues and overcome roadblocks.

“Proving Tangible ROI to Secure, Maintain and Expand HIE Support” wraps up the best practices series by offering strategies for measuring success and return on stakeholder and community investment, which are critical to ensure continual, long-term support. It starts with the creation of a baseline to serve as an anchor point for comparative success within individual participating organizations and across the community. That is followed by the establishment of a formal review process that measures results from multiple perspectives. Tangible measures of improvements, financial sustainability and success are key to maintaining stakeholder involvement by ensuring that no group is disenfranchised, which can erode ongoing support of the initiative.

Transforming community health information technology connectivity from theory to reality requires strong leadership and the shared experiences of those who have gone before. *Best Practices for Community Health Information Exchange* is the Center's first contribution toward that successful revolution.

About the Center for Community Health Leadership

The Center for Community Health Leadership, launched by Misys Healthcare Systems in June 2006, facilitates the development of health information pathways by helping to build connected, prepared and responsible communities. These communities will improve the quality of care delivered to its patients and reduce costs in everyday care administration, as well as in crisis situations such as epidemics and natural disasters. The Center strives to transform the healthcare system within the selected communities via grants of Misys® software and contributions of hardware and services from industry partners. For more information on the Center for Community Health Leadership, visit www.misyscenter.com.



Value Propositions for Community Health Information Exchange: Many Voices, One Vision

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"Most Americans are deeply worried about the escalating cost, fragmentation, and mediocre quality of health care.... The Institute of Medicine report, Crossing the Quality Chasm, urged a national commitment to transforming care delivery to bridge the gulf between care as it is and care as it can and should be. With no national reform effort on the horizon to create an organized system of care and promote innovation, local communities and regions appear to be the only environment where this can begin to happen."¹

To benefit the community as a whole, a successful health information exchange (HIE) must be constructed in a manner that accounts for and serves the needs of each stakeholder group individually and allows all, collectively, to share in the benefit. As a result, the success of a community-based HIE is as much a feat of cooperation as it is one of organization.

While few would argue with the necessity of a unified community commitment, the act of getting stakeholders to the table to engage in discourse regarding the overarching and individual value propositions is the first accomplishment of the data sharing project. Doing so enables the community to strategically build its stakeholder links from a position of strength based on areas of consensus and eliminates the potential for the weakest link to fracture the chain and bring the entire HIE to a halt.

There are myriad opportunities for missteps during this initial value articulation stage, particularly if stakeholders—not all of whom are necessarily local—are overlooked, or the value they can potentially derive from the HIE is under- or overestimated.

For example, a typical community will include healthcare organizations of various forms, including physician practices, hospitals, health systems, and long-term and home care agencies, as well as individual providers, patients, pharmacies, payers and employers. Subsets of those stakeholder groups, such as laboratory service providers or pharmacy benefits managers (PBMs), may operate on a larger national or regional scale, which can make engagement in a community-based initiative more challenging.

Initiatives in states such as Arkansas, Connecticut, Indiana and Tennessee are repeatedly demonstrating that ensuring full stakeholder involvement in the HIE is paramount to success. Failure to account for the benefits potentially available to any individual stakeholder, for instance the laboratory service providers who would likely perceive high value in the initiative's ability to enable electronic results delivery, can result in their disengagement from the process and impact the success of the initiative down the road.

Success in this context can only be achieved by ensuring all interests are represented at the table, where they can engage in preventive mediation regarding areas of disagreement and either reach consensus or clarify an "agreement to disagree."

¹ E. Wagner, B. Austin and C. Coleman, *It Takes a Region: Creating a Framework to Improve Chronic Disease Care* (California HealthCare Foundation 2006).

A successful HIE requires the internalization of a common purpose, which in turn requires “every stakeholder to understand the value proposition for themselves, for other participants, and for the community at large.” The challenge, however, is to determine how to build breadth into that purpose without losing individual stakeholder value. The solution lies in the development of “propositions that highlight mutual benefit,” which will serve to capture the attention of stakeholders and lead to parameters for community involvement.²

Community Voices

Communities are not defined by geography—they are shaped by common aims and pursuits. Ultimately, the healthcare community is defined by those who share goals related to health and care. In this sense, every healthcare continuum is a system comprised of subjective community-based cultural values and objective stakeholder-based financial values. The concept of a community-based HIE is actually that of an infrastructure constructed to support cultural values through a system that is “a set of entities comprising a whole where each component interacts with or is related to at least one other component, and they all serve a common objective.”³

It is only through identification of values as they relate to that common objective that a community can define itself, as well as clarify the manner in which individual components, or stakeholders, relate to each other and to the common objective of the HIE. Through this process of self-definition comes the potential for the community and stakeholders to work together to overcome differences and progress toward a community-valued vision for the HIE. Without the critical first step of stakeholder identification and engagement, there is little chance of establishing a collective value proposition that is thrown with a wide enough net to include all parties, but also retains a pragmatic focus on the motivations of the individual participants.

To set the stage for community collaboration, a successful information exchange must be built in a manner that accounts for both differences and commonalities, that serves the needs and objectives of each stakeholder group individually, and allows all to collectively share in the benefit. Doing so “levels the playing field and allows the focus going forward to be centered squarely on implementing those HIE strategies that benefit the community first, yet still address individual stakeholder needs.”⁴

Clearly, there is an inherent reliance on the leadership involved in this process—leadership that must be strong enough to organize the interests of a diverse group of stakeholders around a common purpose and demonstrate the ability to achieve tangible results. Such an initiative also requires leadership that both understands and can capitalize on the characteristics that are shared by the most successful HIEs, which include:

- Governance by a diverse and broad set of community stakeholders;
- Development and assured adherence to a common set of principles and standards for the technical and policy aspects of information sharing, addressing the needs of every stakeholder;
- Development and implementation of a technical infrastructure based on national standards to facilitate interoperability;
- Development and maintenance of a model for sustainability that aligns the costs with the benefits related to HIE; and
- Use of metrics to measure performance from the perspective of patient care, public health, provider value and economic value⁵

An HIE may also share common goals of improved patient safety and quality of care, enhanced revenue cycle performance, reduced costs and inefficiencies, and improved communications across the care continuum.

² First Consulting Group, *Overcoming Ten Non-Technical Challenges of RHIOs* (Oct. 2006).

³ E. Wagner, B. Austin and C. Coleman 2006.

⁴ E. Wagner, B. Austin and C. Coleman 2006.

⁵ eHealth Initiative, *Connecting Communities Toolkit* (June 2007).

It is from these common goals that the ultimate value proposition will be derived.

Competing Motivations

The key to establishing the value propositions for a community-based HIE is to clarify the motivations for building the information exchange in the first place and identify areas of crossover, areas of no conflict without crossover, and areas of conflict that can be acceptable to the interested parties. The generic value-proposition for the HIE “may be understood as a return on investment (ROI), quality improvement and error reduction, improved access to care, enhanced research capability or other benefits.”⁶ The reality, however, is that competing priorities and interests may motivate parties to act in ways that challenge progress towards communal goals. “The completion in American healthcare...will fracture coalitions that don’t agree on their direction or are weakly led.”⁷ It is the role of any community connectivity initiative to begin a dialogue that charts a course for participant consensus. Cases such as the Indiana Health Information Exchange (IHIE), for example, have taught the market that examining areas of competition is preemptive to ongoing conflict. The First Consulting Group report on HIE tells us that the lesson learned from IHIE is for communities to “prioritize their opportunities across all categories. From supply chain management to patient clinical data, and medication histories to laboratory results, opportunities can be ranked in terms of importance and return on investment.”⁸

The key is to find a balance between the values stakeholders derive from participating in data sharing projects and the interests which compete with pursuing communal goals. For example, “while patients and payers may value the reduction in duplication of services and improvements in the coordination of care that typically result from a properly integrated HIE, healthcare organizations and providers may place a higher value on improved efficiencies in the transfer of services and cost containment and reduction.”⁹ In actuality, the process of identifying value priorities is complex, particularly when considering the relationship between stakeholders who receive the greatest value but are asked to pay the least for the benefits, and those who foot the bill. To prevent creating an imbalance that can disrupt progress incentives, a model should be established that provides an avenue for stakeholders to distribute costs fairly, as with the model established by IHIE, which charges fees for each diagnostic test result transmitted to physicians.

Additionally, the HIE leadership must be certain to define and acknowledge competing interests to ensure they do not impede progress. “Ultimately, priorities will depend on a balanced assessment of cost, readiness, value, and local demand.”¹⁰ It is these combined factors that will contribute to the ongoing experience of value as motivation, with expectations balanced against quality achieved.

Identifying Differences

The presence of strong vision is a central, neutral and potentially conciliatory foundation for building value in a situation of competing values. The problem is, everyone wants progress and nobody wants change.

Establishing commonality is a result of preventive conversation “to anticipate problems, grievances and difficulties between parties before the conflict may arise. This has potential applications in large and private sector organizations, particularly where they are subject to excessive change, competition and economic pressure.”¹¹ That is why it is critical for communications to be facilitated between stakeholders to identify and address disruptive factors and possible barriers to success at every level. This will allow for the formation of an effective, value-based governance structure, which is critical to success of the HIE.

⁶ J.S. Lee, *Regional Health Information Organizations and other Health Information Exchanges: The Value Proposition* (NIHCM 2007).

⁷ E. Wagner, B. Austin and C. Coleman 2006.

⁸ First Consulting Group 2006.

⁹ Center for Community Health Leadership, *Top Ten Success Factors for Community HIE Overview* (Aug. 2007).

¹⁰ First Consulting Group 2006.

¹¹ R. Charlton, *Dispute Resolution Guidebook* (Erskineville NSW: Star Printery Pty Ltd, 2000).

In fact, “maintaining ongoing communication among all stakeholders is the only way to effectively attend to any disruptions or obstacles that may arise throughout the process. Discussing differences in tolerance for such factors as competition, risk, fluidity and innovation helps improve the success of HIE. In order for the exchange of information to truly contribute to the common good—and yield a measurable improvement in patient quality and financial efficiency—it is imperative to keep communication open so that group conflicts are not allowed to impede progress.”

Identifying differences allows for the establishment of effective “leadership, stakeholder power, contextual conditions, collaboration, competition, trust, governance model and history.”¹² For example:

- In Tennessee, local communities developed a common vision to unify previously competing stakeholders¹³
- In Utah, the vision was crafted “to stimulate action...[by being] sufficiently broad to engage all parties, yet sufficiently focused to provide a useful stating point”¹⁴
- In Arkansas, a joint, new business model was developed so that no partner will gain at another’s expense¹⁵
- In Connecticut, educational sessions for outreach to community physicians resulted in significant buy-in¹⁶

It is important to keep in mind that any successful information exchange initiative will depend on “a coordinated set of behavior changes on the part of providers, insurers, and payers.”¹⁷ Stakeholder influence depends on stakeholder participation, and stakeholder participation results in increased value for all, including:

Community

- Patients
- Providers
- Hospitals and health systems
- Payers
- Employers
- Other stakeholders
 - Long-term care
 - Home care
 - Laboratory services providers
 - Radiology service providers
 - Public health (communicable disease reporting and biosurveillance)
 - Health services researchers

¹² Lee 2007.

¹³ Lee 2007.

¹⁴ First Consulting Group 2006.

¹⁵ Lee 2007.

¹⁶ J. Walker, E. Pan, D. Johnston, J. Adler-Milstein, D.W. Bates, and B. Middleton, *The Value of Healthcare Information Exchange and Interoperability*, Health Affairs [Millwood] 19 Jan. 2005: W5-18.

¹⁷ E. Wagner, B. Austin and C. Coleman 2006.



COMMUNITY	PATIENTS	PROVIDERS	HOSPITALS	PAYERS	EMPLOYERS
<p>Increase efficiency of transfer of services and claims processing</p> <p>Reduce medical errors and adverse events, administrative costs, and time spent on patient intake</p> <p>Faster, more accessible diagnostic results</p> <p>Improve quality and coordination of care</p>	<p>Improve care at the point of delivery</p> <p>Improve engagement in care process (particularly through PHRs)</p> <p>Reduce therapy, medication and testing duplication</p> <p>Shorten waiting times in both practices and ERs</p> <p>Access diagnostic test results, as well as medication refill requests, appt requests, etc. online</p>	<p>Access more accurate data</p> <p>Faster and better documentation at the point of care</p> <p>Reduce malpractice insurance rates</p> <p>Reduce time spent reviewing case notes and transcriptions</p> <p>Improve revenue via the ability to see more patients</p> <p>Convert paper chart storage areas into active exam room space</p>	<p>Reduce wait times in the ER department</p> <p>Increase efficiency of discharge planning and discharge earlier, when clinically appropriate</p> <p>Increase revenue through conversion of chart storage space</p> <p>Enhance revenue cycle management through faster claims processing and reimbursement</p>	<p>Increase member satisfaction</p> <p>Decrease test duplication and repetitive diagnoses</p> <p>Reduce time reviewing claims and disputes</p> <p>Reduce prescription drug costs due to improved compliance & reduced duplications</p> <p>Track utilization rates, quality and performance measures</p> <p>Reduce costs associated with chronic diseases through improved care management</p> <p>Mine data to assess preventive care compliance and identify at-risk populations</p>	<p>Reduce costs by decreasing ER visits, preventable admissions and redundant testing</p> <p>Improve transparency on costs and quality</p> <p>Reduce absenteeism due to improved management of chronic conditions and worker's comp claim incidents</p> <p>Reduce costs through improving preventive care</p> <p>Reduce time reviewing worker's comp claims</p> <p>Reduce premiums through cost savings realized by streamlining care processes</p> <p>Improve outcomes on claims appeals due to availability of complete records</p>
Sources: Center for Community Health Leadership. "Top Ten Success Factors for Community HIE Overview." 2007. Center for Community Health Leadership Advisory Board. (2006). Proceedings from CCHL Advisory Board Kick Off Meeting. Las Vegas, NV. Center for Community Health Leadership Advisory Board. (2007). Proceedings from CCHL Advisory Board Meeting. Amelia Island, FL. Deloitte Center for Health Solutions. "State's Role in Health Information Exchanges: A Collaborative Approach Across Multiple Stakeholders." 2006. Malepati, S., Kushner, K., Lee, J. "RHIOs and the Value Proposition: Value is in the Eye of the Beholder." <i>Journal of AHIMA</i> . March 2007.					

Seeking Value

It is evident that fragmentation and competition within the healthcare market means that “coalitions that want to improve care for populations must overcome these barriers.”¹⁸ Establishing the means to surmount such barriers requires engaging “diverse stakeholders in a frank and open discussion about the value proposition for participating in [HIE].” Ultimately, this requires that the HIE “look like, act like, and operate like a business when in fact the stakeholders come from many different industry sectors and are sometimes competitors. [Together these] organizations are tackling non-technical challenges related to governance, financial sustainability, meeting customer needs, and adherence to standards and government regulations.”¹⁹ There are, fortunately, progressive means by which to undertake such communications.

The dialogue on the value proposition of an information exchange for the National Institute for Health Care Management Foundation (NIHCM), led by the Agency for Healthcare Research and Quality (AHRQ), for example, was based on in-depth assessment of three critical questions:

- How does the electronic exchange of health information create value for stakeholders participating in HIE?
- What are the critical factors that lead to formation and sustainability of HIE?
- How do you see HIE developing over the next several years?

What they learned from answering those questions was that value was created not only through tracking a quantifiable return on investment (ROI), but also through the establishment of trust and quality improvement overall though the electronic dissemination of agreed-upon information in a manner that ultimately benefited all stakeholders.²⁰

According to the Center for Information Technology Leadership (CITL), an important consideration is that different levels of data exchange will satisfy different levels of value. Levels of data exchange can be defined as follows:

- Level 1: No use of IT to share information
- Level 2: Transmission of non-standardized information via basic IT; information within the document cannot be electronically manipulated (i.e. fax or personal computer-based exchange of scanned documents, pictures, or portable document format files)
- Level 3: Transmission of structured messages containing non-standardized data; requires interfaces that can translate incoming data from the sending system's vocabulary to the receiving organization's vocabulary; usually results in imperfect translations because of vocabularies' incompatible levels of detail (i.e. email of free text, or PC-based exchange of files in incompatible/proprietary file formats, HL-7 messages)
- Level 4: Transmission of structured messages containing standardized and coded data; idealized state in which all systems exchange information using the same formats and vocabularies (i.e. automated exchange of coded results from an external lab into a provider's EMR, automated exchange of a patient's “problem list”)

To illustrate the differences in values derived between different levels of data exchange, consider that both free-standing and hospital-based outpatient clinicians use external laboratories. Interoperability between these providers would reduce redundant testing, delays and costs associated with a paper-based Level 1 system, and speed results reporting. These savings would produce an annual national benefit of \$8.09 billion at Level 2, \$18.8 billion at Level 3 and \$31.8 billion at Level 4.²¹

¹⁸ E. Wagner, B. Austin and C. Coleman 2006.

¹⁹ First Consulting Group 2006.

²⁰ Lee 2007.

²¹ B. Middleton, *The Value of Healthcare Information Exchange and Interoperability*, 2004 HIMSS Annual Conference and Exhibition, Orange County Convention Center, Orlando, FL 23 Feb. 2004.

The level of data exchange a community-based HIE should strive for depends entirely upon the value to stakeholders, the community's desire to achieve and the resources in place to deploy the infrastructure. Ultimately, the scope of the connectivity project should be based on the values derived by individual stakeholders and the community as a whole, as well as their ability to minimize competition and test the collaborative model.

The success of health information exchange is tied not only to the pursuit of the greater community good, but also to the ability to demonstrate individual stakeholder value. This is accomplished by establishing the community as a collaborative entity through the identification of differences, a clear comprehension of potential obstacles and distillation of a common set of stakeholder values.

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Common Goals for the Community HIE: Building a Roadmap

Michael Fleming, MD, FAAFP

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"The outcome of the Santa Barbara Project... suggests that other local efforts to create health information exchanges would do well to address the value question upfront, at the beginning of their work. Today, creating a sustainable business model — and particularly a model that will support the initial costs of constructing information exchange platforms and linking local providers and other entities — is one of the biggest challenges for nascent health information exchange efforts."²²

Critical to the success of HIE is the ability to first reach consensus on a shared community vision and purpose, as outlined in Chapter One of the *Best Practices for Community Health Information Exchange*, and second to develop a set of common goals that achieve that vision. Without clearly defined goals that address the care needs of the community as well as the business needs of each stakeholder, the chances for success are slim.

Thus, identifying the improvements the HIE seeks to achieve and developing strategies to address any related barriers will ultimately be the foundation upon which a successful community-based HIE is built — a foundation that can lead to improved outcomes, guidelines to measure and achieve success, and the realization of multiple objectives, including reduced costs, improved revenues and enhanced efficiencies.

Ultimately, the initiative's goals must reflect stakeholder consensus on the priorities of community benefit, address areas of potential conflict and specify that the overall good of the community as a whole is the ultimate measure of success. This approach can help transcend differences between stakeholder expectations and place the focus on those priorities that will most benefit the community as a whole.

A successful community-based data sharing project will focus on achieving the most important community goals, which typically relate to improved patient safety and quality of care. However, it will also focus on achieving individual stakeholder goals related to cost reductions, improved revenue cycle performance and increased productivity.

"Preventing errors and improving safety for patients require a systems approach in order to modify the conditions that contribute to errors. People working in health care are among the most educated and dedicated workforce in any industry. The problem is not bad people; the problem is that the system needs to be made safer."²³

Defining the Goals

To build a roadmap for any HIE project, the first step is to identify and define the overarching community goal that the initiative is meant to achieve, then translate that into "sub-goals" that address individual stakeholder interests. Having these multiple goals exponentially increases the chances of HIE success by

²² Donald L. Holmquest, *Another Lesson From Santa Barbara*, *Health Affairs [Millwood]* 1 Aug. 2007: Web Exclusives.

²³ Institute of Medicine, *To Err is Human: Building a Safer Health System*, eds. Linda T. Kohn, Janet M. Corrigan, and Molla S. Donaldson (Washington, DC: National Academy Press, 2000).

ensuring the community and individual stakeholders derive value from the initiative and mitigating the risk of too narrow a focus.

Working from the assumption that quality is a universal goal that touches every stakeholder, the next step is to define what “quality” is as it applies to the community, the HIE and the individual stakeholders. Research addressing the definition of quality is deep and diverse, requiring careful evaluation by the governing body to identify that which most closely matches the unique needs of the community. There may also be a desire to create their own definition based on their intimate knowledge of the local healthcare system they are working to improve.

For example, one definition states, “Quality is doing the right thing, but only the right thing, at the right time for every patient.”²⁴

In this definition, the “right thing” includes following evidence-based practice and clinical guidelines and incorporating preventive care, including risk assessments, screening and early interventions. The fact that adults currently receive appropriate care in only about half (54.9 percent) of their medical encounters underscores the need for such focus.

...On average, Americans receive about half of recommended medical care processes. Although the size of the quality problem may continue to be debated, the gap between what we know works and what is actually done is substantial enough to warrant attention. These deficits, which pose serious threats to the health and well-being of the U.S. public, persist despite initiatives by both the federal government and private health care delivery systems to improve care.²⁵

The Institute of Medicine (IOM), on the other hand, defines quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.”²⁶

IOM further outlines six “aims for improvement” to address key dimensions in which today's healthcare system functions at lower levels than it should, to ensure that healthcare is:

- *Safe*: Avoiding injuries to patients from the care that is intended to help them
- *Effective*: Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit
- *Patient-Centered*: Providing care that is respectful of and responsive to individual patient preferences, needs and values, and ensuring that patient values guide all clinical decisions
- *Timely*: Reducing waits and sometimes harmful delays for those who receive and give care
- *Efficient*: Avoiding waste, including equipment, supplies, ideas and energy
- *Equitable*: Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location and socioeconomic status²⁷

Additionally, the American Health Information Community (AHIC) Quality Workgroup defines the characteristics of the system with respect to the quality enterprise as:

- Receiving care
- Managing clinician-patient interactions
- Managing health of defined populations
- Coordination of care

²⁴ Michael Fleming, *The Future of Family Medicine*, The Francis P. Rhoades Memorial Lecture, Michigan Academy of Family Physicians Annual Scientific Assembly, Mackinac Island, MI 25 June 2002.

²⁵ Elizabeth A. McGlynn, et al., *The Quality of Health Care Delivered to Adults in the United States*, *The New England Journal of Medicine* 26 June 2003: 2635-2645.

²⁶ Institute of Medicine, *Medicare: A Strategy for Quality Assurance, Volume I*, ed. Kathleen N. Lohr (Washington, DC: National Academy Press, 1990).

²⁷ Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the 21st Century* (Washington, DC: National Academy Press, 2001).

- Improving quality
- Measuring and reporting quality
- Reimbursement

AHIC acknowledges that there is a transformational power in utilizing these skeletal guidelines to establish a framework for the HIE process that has quality as its shared community goal:

In the future, stakeholders, including consumers, purchasers, providers, policymakers, researchers, accrediting and oversight bodies, will rely on transparent reporting of quality performance and quality improvement to inform their decision making about care. Information technology and the sharing of health information across a network of regional health information entities using data from electronic health records (EHRs), personal health records (PHRs), and strong clinical decision support (CDS) systems will assist providers in ensuring that the right care is delivered to the right patient—every time.²⁸

Community vs. Individual Goals

As stated previously, while achieving consensus on the overarching community goal is paramount for success, compatible goals must also be identified and defined to address individual priorities, needs and interests of the stakeholder groups within the HIE.

Again working from the assumption that the majority of stakeholder groups desire, in addition to quality, to achieve increased efficiencies, lower costs and improved revenues, the next step is to define each of those goals in a way that is meaningful to the stakeholders who seek to achieve them and relate them back to the shared community goal of quality.

In many ways, the definition of these goals may not be simply to provide more—and more expensive—care, but rather to provide better, more appropriate care utilizing the enhanced communications and accurate information made possible through the HIE.

Consider the case of a man with chest pains who undergoes multiple diagnostic procedures, a biopsy and evaluation by a cardiologist. The pain is eventually linked to his overhead, deltoid-impacting work on jet engines, rather than a heart condition. Had the basic question of his occupation been posed upfront, the cost of care would have been \$60, rather than the \$168,000 ultimately billed to his health plan, and the man's pain would have been alleviated much sooner.

Spending captures many aspects of local health care delivery systems, such as physician practice styles, composition of the medical workforce, and capacity constraints. Therefore, naïve policies that simply target spending could have the undesirable effect of reducing the quality of care in high-spending states even more. Also, the quality measures we use do not capture the totality of health care provision.²⁹

Clearly, focusing only on ways to reduce the cost of care will not adequately address stakeholder goals, nor will it tie back to the overarching goal, which in this example is quality. Instead, the definition of the cost/revenue/efficiency goals, which are so closely linked that it is possible to define them in tandem, must be based on the return on investment (ROI) each stakeholder can achieve through the information exchange initiative.

- In a physician practice, for instance, the HIE could result in significant time savings by increasing the number of patients requesting appointments or prescription refills online, or viewing lab orders and results electronically. Keeping patient information online and submitting transactions to electronic point-of-care charting will reduce or eliminate the need for transcription services. Data sharing between medical organizations also has the potential to reduce the time spent on patient

²⁸ AHIC Quality Workgroup, *Executive Summary of the End State Vision*, 31 Jan. 2007, 21 Aug. 2007 <http://www.hhs.gov/healthit/ahic/materials/qual_vision_execsum.pdf>.

²⁹ Katherine Baicker and Amitabh Chandra, *Medicare Spending, The Physician Workforce, and Beneficiaries' Quality of Care*, *Health Affairs [Millwood]* 7 April 2004: Web Exclusives.

intake, and the time patients spend in waiting rooms. Thus, from the physician stakeholder perspective, the goal of reduced costs and improved revenues will be achieved through savings in time, overhead, human resources and materials, as well as through the ability to see more patients.

- For hospital stakeholders, goals might be defined as a reduction in time spent on patient intake and shorter wait times in Emergency Departments. The HIE could result in a reduction in medication errors due to more complete information at the point of care, and streamlined communications of orders and results that can lead to earlier discharges, when medically appropriate, which save the hospital money in payment models that are based on per episode vs. length of stay.
- Payers may define this goal as a reduction in time spent reviewing claims disputes due to improved documentation or a reduction in utilization levels through the elimination of duplicative tests, repetitive diagnosis, insufficient care for chronic disease and unnecessary prescriptions. Employer stakeholders, on the other hand, will see ROI through a reduction in the amount of time spent managing claims appeals, reductions in Emergency Department visits by employees with chronic conditions—which also results in costs related to lost productivity—and improved management of workers compensation claims.

A common thread runs throughout these various definitions of stakeholder-specific goals: the technology deployed as part of the exchange initiative should ultimately result in the kinds of workflow automation and integration that “allows healthcare organizations to respond to changing business, financial and compliance requirements by automating common tasks throughout the organization—including revenue cycle projects, interactions with web sites, integrating new applications, systems and devices, and electronically monitoring and managing user activity.”³⁰

As such, when establishing definitions for individual stakeholder goals and relating them back to the overarching community value, organizers would do well to follow the lead of the Agency for Healthcare Research and Quality (AHRQ) and focus not just on the deployment of IT, but on the marriage between health IT and the way in which work is done in healthcare.

“Health IT is one part technical, and two parts culture and work process change,” and offers a chance to design new and better workflows and review work patterns that have not really been examined in the past.³¹

Designing the Roadmap

Once the community and individual stakeholder goals have been defined and consensus has been reached, it is time to establish the roadmap for achieving those outcomes. More often than not, this phase will again require the identification of barriers, including stakeholder competition and issues of trust and confidence, particularly in terms of the data that will be exchanged.

“To achieve comprehensive community buy-in, it is important to address such issues as potential areas of competition between stakeholders and differences in regulatory and compliance requirements. This levels the playing field and allows the focus going forward to be centered squarely on implementing those HIE strategies that benefit the community first, yet still addresses individual stakeholder needs.”³²

The exchange of data is the core component of the HIE, as data will ultimately result in the workflow and care improvements that will achieve the established goals, as well as measure the overall success of the initiative.

As such, one of the first issues that must be addressed when designing the roadmap for achieving the shared and individual stakeholder goals is the level of trust and confidence each stakeholder has

³⁰ Brian Thiel, *Connecticut Hospital Improves Workflow Efficiency Through ‘Scripting,’* [HealthLeaders News](#), 24 July 2007.

³¹ Carolyn M. Clancy, *Health Information Technology, Quality of Care, and Evidence-based Medicine: An Interlinked Triad*, Annual Symposium, American Medical Informatics Association, Washington, DC 25 Oct. 2005.

³² Center for Community Health Leadership, *Top Ten Success Factors for Community HIE Overview* (Aug. 2007).

concerning the data that is being exchanged. In general, the healthcare system tends to be insular in nature; the concept of sharing information is anathema. Unless these issues are addressed early on, the HIE will not succeed.

Because the exchanged data, after it is de-identified for privacy, will ultimately be used by providers to measure their performance against their peer groups and by the community to measure the success of the HIE, it is imperative that the governing foundation set policies for data collection, access and ownership that all stakeholders can agree to.

There are two prevailing models for collection and management of the data exchanged in an HIE:

- Centralized: The entity that runs the HIE also stores patient data on its own servers.
- Federated: Each HIE stakeholder/participant stores information on its own system and grants access to the other participants as appropriate.

Each model must be carefully considered when establishing policies for data collection, ownership and management. The centralized model, for example, is considered to be the most simple to set up. It offers consistency, quick access and can be brought to market faster because most databases with clinical data are not web-enabled. However, that same centralized model carries higher hardware and operational costs and can be difficult to manage because of the multitude of participants. Additionally, providers sometimes have concerns about the data they consider to be theirs being housed elsewhere.

The federated model, on the other hand, offers a greater assurance of privacy, is backed by proven working examples, and may be easier to gain provider buy-in because the politics of storing and accessing data are less of an issue. The downside is that there are potential problems displaying data in a user-friendly manner because of differing protocols, and there can be delays in accessing the data.³³

Achieving consensus on how the data will be exchanged and managed is critical to attaining the level of confidence and trust that is necessary for stakeholders and participants to view the results culled from it as valid. It also sets the stage for the next step in designing the roadmap—establishing the guidelines, benchmarks and quality measures necessary to achieve the information exchange initiative's goals and measure its success.

Quality, cost, revenues and efficiency go hand-in-hand within a community-based data sharing project and require the establishment of quality measures and guidelines, such as those related to preventive and chronic disease management, that will form the basis for a plan to achieve these shared goals. The plan should incorporate embedded guidelines for care that may involve the use of evidence-based medicine to ensure compliance with care guidelines.

By deploying evidence-based guidelines across the HIE, providers can utilize them in their day-to-day practice to achieve a higher level of efficiency in the provision of care. They will also be better able to track and measure patient compliance with the most common preventive measures, thus realizing improved quality and outcomes.

A key component of any solution...is the routine availability of information on performance at all levels. Making such information available will require a major overhaul of our current health information systems, with a focus on automating the entry and retrieval of key data for clinical decision making and for the measurement and reporting of quality. Establishing a national baseline for performance makes it possible to assess the effect of policy changes and to evaluate large-scale national, regional, state or local efforts to improve quality.³⁴

To achieve the shared goal of quality and the stakeholder goals of improved efficiency, enhanced revenues and reduced costs, the organizers of an HIE should identify a set of measures based on the unique characteristics of their community and create a set of guidelines to address those issues, i.e. diabetes, cardiovascular disease, hypertension, asthma, etc., that are most critical to their population. By

³³ Dagmara Scalise, *Which Way RHIO?*, Hospitals & Health Networks, June 2006.

³⁴ Elizabeth A. McGlynn, et al. 2003.

identifying those elements of healthcare that are most costly for their unique region, the constituencies can then utilize existing resources, such as the National Guidelines Clearinghouse, to extract the specific data points needed to develop quality measures.

The AQA Alliance, a collaboration between the American Academy of Family Physicians (AAFP), American College of Physicians (ACP), America's Health Insurance Plans (AHIP) and AHRQ, has also developed a set of starter data that organizations can incorporate to help them establish the right quality measures and care guidelines for their community.

This data can then be used to establish an HIE administrative structure that overcomes stakeholder differences and achieves goals. For example, increased efficiencies in the care process will lead both directly and indirectly to enhanced revenue for the practices involved. Additionally, when providers can be convinced to share implementation tips and best practices, they will realize increased efficiencies and reduced costs much sooner.

Finally, by achieving consensus on the goals of the HIE, creating policies to resolve conflicts over the management and exchange of information, and establishing guidelines to improve care and measure outcomes, individual stakeholders will be empowered to monitor their individual levels of achievement and identify areas for improvement.

The end results will be an HIE that addresses both the shared community goal and the individual stakeholder goals, and does so in a demonstrable way.

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Staying on Track: Facilitating an Ongoing Discourse Among Stakeholders

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"Ongoing efforts at building trust and collaboration are necessary as...development progresses. There will be issues that arise along the way in the ongoing...development that will require the continued need to refocus the group on the benefits and the need to collaborate. Also, as new stakeholder groups appear these must be integrated into the organization. In short, consensus, trust, and collaboration are vitally important and need to be worked on and nurtured continually."³⁵

Establishing a set of clearly defined common goals that achieve the shared community vision and purpose of the HIE, as outlined in Chapter Two of the *Best Practices for Community Health Information Exchange*, necessitates opening a dialogue between community leaders to achieve consensus on the priorities of community benefit; how the initiative can meet the business needs of each stakeholder; intended outcomes; guidelines to measure success; and how to best address areas of potential conflict and realize multiple objectives.

However, transcending the differences between stakeholder expectations and retaining the focus on the priorities that will most benefit the community as a whole requires not just an initial conversation but an ongoing discourse among stakeholders regarding values, expectations and conflicts. It requires strong leadership and stakeholder champions capable not only of advancing awareness and understanding of the HIE's goals and objectives, but also to effectively attend to any disruptions or obstacles that may arise throughout the process.

"To transform competition into collaboration, leaders will need to diffuse win-lose scenarios. Dialog and patience will help stakeholders and groups focus on core HIE principles they all truly share in their quest to exchange data in the region. This process will build trust and cooperation, which creates collaboration between them and encourages a future state of regional HIE growth and sustainability."³⁶

Capable, Credible Leadership

Facilitating ongoing discourse among stakeholders and overcoming obstacles and objections requires a dedicated champion to take the reins and drive the initiative forward. Because they will be responsible for organizing a diverse group of stakeholders into a well-articulated governance structure capable of making the decisions necessary to achieve tangible short- and long-term results, HIE leaders must be passionate, knowledgeable, innovative and diplomatic.

"Look at any successful organization; at its helm is an effective leader who can be described with words like strong, intelligent, decisive and determined. Those who serve as champions of RHIOs must possess all of these qualities—and more, and in very large measure, because of the dynamics of the stakeholder

³⁵ Healthlink, *Regional Health Information Organization (RHIO): Frequently Asked Questions* (Sept. 2005).

³⁶ Brian E. Dixon and Susan D. Scamurra, *Is There Such a Thing as Healthy Competition? Strategies for Managing Competition between Developing Regional Health Information Organizations*, HIMSS 07 Annual Conference and Exhibition, Ernest N. Morial Convention Center, New Orleans, LA 27 Feb. 2007.

groups involved. RHIOs are comprised of highly diverse participating members who often have competing interests.”³⁷

These competing interests often hold stereotypes, such as the belief that providers are practicing irresponsible care rife with errors, that payers are overcharging employers and reimbursing providers too little, or that employees want to pay nothing but receive everything. The stereotypes carry with them a lack of trust, which must be overcome for the initiative to succeed, and a belief that what benefits one stakeholder will not benefit another.

“These powerful complexities require a leader who possesses large measures of persuasiveness, diplomacy, business-sense, tenacity and charisma...Individuals capable of shouldering the responsibilities of a RHIO are rare. Identifying the right person for the job is the primary key to success.”³⁸

Identifying a strong leader capable of playing the dual, often contradictory, roles of HIE champion and organizational driver, cannot be left to chance, a lesson the Santa Barbara County Care Data Exchange (SBCCDE) learned too late.

Once considered a model for emerging information exchange projects, SBCCDE’s board of directors voted in December 2006 to cease operations, despite having finally built a basic infrastructure and beginning to provide some data to clinical end users. Reasons for the failure have been exhaustively analyzed, with most concluding it was due primarily to lack of a compelling business case, distorted economic incentives, vendor limitations and software delays—all of which contributed to poor momentum and credibility.

A final, significant failure was the assumption by the two key drivers of the initiative, the California HealthCare Foundation (CHCF) and CareScience, that community leadership would grow over time and strengthen the effort.

“But CHCF’s largesse and CareScience’s expertise engendered relatively passive community participation. SBCCDE technology, governance, and administrative structures; expertise; business cases; and momentum arose externally, not ‘organically’ at the local level. CareScience had the most decision-making authority; it served as the program manager, software vendor, governance organizer, and often the public face and champion of the project. Participants did not have enough interest in the SBCCDE or financial ‘skin in the game’ to counterbalance and provide a reality check for CareScience’s assumptions and decisions.”³⁹

SBCCDE is a cautionary tale about leadership selection. The program manager was CareScience’s CEO, David J. Brailer, MD, PhD, who would later become the first National Coordinator for Health Information Technology. Despite what few would argue was a stellar pedigree for the position, Dr. Brailer and others have since admitted that, in addition to the passivity the funding promoted, the leadership lacked vision.”⁴⁰

A strong leader must also be capable of resolving conflicts between stakeholders that can cause an initiative to implode. That was the lesson the Oregon Business Council learned in August 2007, when the work underway by the Health Data Exchange Group the council formed to bring a RHIO to Portland, Ore., came to a standstill.

Despite having reached a number of key agreements, including the governance structure and business model, hospital stakeholders could not support a business plan developed by a consultant on behalf of the group. That plan, which was projected to save the community \$17 million a year in part from the elimination of duplicate testing, would have cost participants \$3.4 million over a five-year budget period, plus in-house operating costs of up to \$150,000 a year for participating hospitals. The initiative’s leadership was unable to negotiate a compromise that would have moved the project forward.

³⁷ John Smaling, *A Dose of RHIOlity*, *Health Management Technology*, Dec. 2005.

³⁸ Smaling 2005.

³⁹ Robert H. Miller and Bradley S. Miller, *The Santa Barbara County Care Data Exchange: Lessons Learned* (Aug. 2007).

⁴⁰ Colleen Egan, *Many Lessons To Be Learned From Santa Barbara Data Exchange*, *iHealthBeat*, 3 Aug. 2007.

The project chairman has said that despite the failure to reach an agreement, the business council workgroup made great strides. “We have reached every one of the milestones we set in front of us...The one remaining milestone to overcome is the cost. For a hospital, it’s a difficult decision. They look at this and say for every test that’s done there’s a revenue stream. A duplicate set of tests increases revenue somewhere in the system...This is a long-term process...We’re talking about changing a culture in health care that has been very control oriented to one that would be more patient centered. Culture doesn’t change quickly.”⁴¹

For both the Health Data Exchange Group and SBCCDE—as well as other HIEs that have faltered—the hard lesson has been that clearly defining the value proposition, building trust, and resolving technical and business issues requires strong, passionate leadership capable of rallying forces and quashing conflicts to allow the initiative to achieve and sustain a forward momentum.

Establishing an Executive Team

Even the strongest leader cannot champion the initiative and facilitate an ongoing discourse among stakeholders on their own. They need the support that comes from a well-articulated governance structure designed to start the initiative out on the right foot and keep it there as the HIE grows and matures.

Industry-based guidelines for defining the full governance structure are provided in Chapter Five of the *Best Practices for Community Health Information Exchange*. However, the first step is to establish an Executive Steering Committee or other neutral organization to be the sponsor of the HIE.

To avoid allowing competitive forces to sideline an HIE project, the Executive Steering Committee must represent all stakeholder factions and be empowered with initiating the framework for making the many decisions that will ultimately define and guide the project. “One of the lessons about governance is that it should be consistent with the mission and the purpose for pursuing interoperability in the first place.”⁴²

A properly constructed Executive Steering Committee with clear objectives and expectations allows divergent stakeholders to start immediately on the path of working toward a common goal, rather than as individuals toward what are often competing goals. Further, by involving top stakeholder decision makers in determining the final governance structure, consensus and buy-in can be achieved.

If those driving the development and growth of the HIE understand the dynamics of competition and design the governance model accordingly, they will be better able to manage it in a way that sustains collaboration among all stakeholders at the outset.

Because participants come together for different reasons, the Executive Steering Committee must incorporate the strengths of each stakeholder organization and provide the appropriate level of consideration to each group’s incentive for participation.⁴³

It is this governing body that will ultimately be responsible for determining the governance model that fits the unique circumstances of the initiative at hand, as well as establishing the realistic and achievable goals that help foster the dialogue necessary to keep stakeholders engaged and the process moving forward.

For example, the Arizona Health-e Connection established an Executive Steering Committee comprised of 43 diverse members representing state agencies, private employers, not-for-profit foundations, higher education institutions, healthcare associations, health insurance companies, hospital systems, federal agencies and a county health district. The diversity of committee members and their focus on moving the initiative forward enabled them to coordinate the efforts of more than 300 stakeholders to create a statewide roadmap within six months.

⁴¹ Peter Korn, *Record-sharing stalls*, Portland Tribune, 10 Aug. 2007.

⁴² First Consulting Group, *Overcoming Ten Non-Technical Challenges of RHIOs* (Oct. 2006).

⁴³ First Consulting Group 2006.

The statewide implementation activities resulting from the Arizona Health-e Connection Steering Committee and Roadmap have placed Arizona in the top six percentile of states in the area of e-health achievement. A not-for-profit organization, with a board comprised of a broad base of private and public stakeholders, has now been established to move the implementation activities forward.⁴⁴

Members of the North Dakota Health Information Technology Steering Committee, which is a statewide collaborative involving public-private entities who are committed to achieving the vision and mission by driving the statewide HIT/HIE initiative, serve under a clear-cut set of expectations. Each is expected to bring the perspective of the facility, organization or sector they represent to all Steering Committee discussions and decisions; facilitate communication back to their constituency with regard to the vision, mission, goals, intent and activities of the HIT Steering Committee and subcommittees; and keep the statewide interests of the vision and mission foremost in decisions and votes.⁴⁵

Many HIE Executive Steering Committees go a step further by establishing subcommittees to represent the views of individual stakeholder groups that would also be responsible for communicating their unique perspectives back to the full committee. This system ensures that individual stakeholders will have a forum to express their concerns and issues and can be confident that those views will be presented to the Executive Steering Committee and given the proper consideration.

This committee structure can also help eliminate group conflicts on issues that might impede progress, such as measuring and sharing improvements in patient quality and financial efficiency, as well as measuring productivity, revenue enhancement and expense reduction. Ensuring that individual stakeholder views and concerns are adequately conveyed to the leadership will advance the collaborative spirit of the initiative and facilitate identification of the most efficient ways to achieve the HIE's common goals.

For example, the North Carolina Healthcare Information and Communications Alliance (NCHICA) cites balancing its members' various interests as one of its foremost priorities and challenges. It credits much of its success to its collaborative approach to leadership, which includes representatives from employers, industry, professional associations, academic health centers, hospitals, medical groups and specialty societies. It has also "engaged key physicians who understand the relationship between quality and technology and incorporated these physicians into a leadership team that spreads awareness of the project and garners support for the program."⁴⁶

Structured Communication and Outreach for Continued Engagement

With the governance structure taking shape, the next step toward facilitating an ongoing discourse among stakeholders is to identify ways to ensure that the interests and perspectives of all stakeholder groups are represented and conveyed to the group as a whole.

The reality is that stakeholders are often direct competitors. If left unaddressed, the appearance of a conflict of interest can inhibit the sharing of data and information about business practices. However, these conflicts can often be set aside if stakeholders understand that there are greater opportunities to be realized.⁴⁷

"Discussing differences in tolerance for such factors as competition, risk, fluidity and innovation helps improve the success of HIE. In order for the exchange of information to truly contribute to the common

⁴⁴ Arizona Health-e Connection, Application for the National Association of State Chief Information Officers 2007 Recognition Awards for Outstanding Achievement in the Field of Information Technology, 7 Sept. 2007 <<http://www.nascio.org/awards/nominations/2007/2007AZ2-Health%20Connection%20Recognition%20Award%20Application%202007.pdf>

⁴⁵ North Dakota State Office of Rural Health, *North Dakota Health Information Technology Steering Committee*, 3 Sept. 2007 <<http://www.med.und.edu/depts/rural/sorh/hit/members/>

⁴⁶ Avalere Health LLC, *Evolution of State Health Information Exchange: A Study of Vision, Strategy, and Progress*, Jan. 2006, 6 Sept. 2007 <http://www.avalerehealth.net/research/docs/State_based_Health_Information_Exchange_Final_Report.pdf

⁴⁷ First Consulting Group 2006.

good—and yield a measurable improvement in patient quality and financial efficiency—it is imperative to keep communication open so that group conflicts are not allowed to impede progress.”⁴⁸

One approach is to establish a formal process and structure to facilitate ongoing communication, which can resolve conflicts and prevent backtracking to individual goals if a stakeholder feels shut out of the process. It levels the playing field so that the issues and concerns of any one stakeholder group are not given more weight than those of others.

An excellent example of how an imbalance in power can impede progress is what took place between Yale-New Haven Hospital and the Hospital of Saint Raphael at the onset of the establishment of a local HIE in New Haven, Conn.

Yale-New Haven Hospital and the Hospital of Saint Raphael have been long-time competitors for patients and physician loyalty. The Hospital of Saint Raphael, as the smaller of the two hospitals, initially saw the data sharing network as a possible competitive differentiator. However, as the project gained traction and local physicians became engaged, the two hospitals were asked to set aside competitive differences and secure a means of finding common ground.

While the competition between the two health systems will continue in the future, the HIE initiative has been one means by which the hospitals have seen the value in working toward a common goal.

Establishing an Outreach Committee to provide a voice for all stakeholder groups is a key strategy for recognizing and responding to competitive and other issues that threaten progress. This committee should work toward establishing proactive communication strategies that utilize best practices, lessons learned and case studies gleaned from other community HIEs as tools for education, conflict management and reaffirmation of stakeholder commitment.

While the Outreach Committee may report to the Executive Steering Committee, it should be allowed enough independence to enable it to:

- Identify potential alliances and partnerships, including those that may not fit neatly into previously defined stakeholder groups
- Identify and implement the activities needed to motivate those partners to begin working collaboratively on addressing key issues that arise throughout the process in an equitable manner

“Engaging broad stakeholder participation is critical because it has proven difficult to influence the behavior of a given stakeholder group if it is not part of the decision-making process. Groups without a voice will not participate. Stakeholders want to know that decisions are open and that they have input in the final design. Presenting each stakeholder with the same information and educating each so that all understand the issues associated with each choice establishes trust over time and creates an environment in which a fruitful collaboration can occur.”⁴⁹

Tailoring and Targeting the Message

The Outreach Committee should operationalize on its mandates by taking a proactive approach to communication that serves to open and maintain a dialogue with stakeholders who might otherwise be overlooked or who may not be willing to work through a formal chain of command.

This approach can take several forms, such as face-to-face meetings with individual stakeholder groups where needs, wants and concerns can be aired in a noncompetitive environment. Getting participants together in the same room to confront developing problems through the exchange of ideas and solutions is the best way to retain consensus and remain on track when challenges begin to arise.

⁴⁸ Center for Community Health Leadership, *Top Ten Success Factors for Community HIE Overview* (Aug. 2007).

⁴⁹ Sarath Malepati, Kathryn Kushner and Jason S. Lee, *RHIOs and the Value Proposition: Value Is in the Eye of the Beholder*, *Journal of AHIMA* March 2007: 24-29.

Particularly in the case of controversial issues, a proactive approach invites discourse and provides the leadership with the opportunity to help conflicting stakeholders step back and refocus on identifying a solution that allows the initiative to move beyond any impasse that can stop the forward momentum.

Communication strategies should emphasize the opportunity to achieve individual goals via a joint focus on community goals, even where it requires setting aside competitive interests in favor of the greater good. In other words, “building genuine new community bridges can diffuse win-lose scenarios and lead to the realization of widely held community goals.”⁵⁰

More important than the format of proactive communication strategies is the content. Because the end goal should be the effective conveyance of value propositions to all stakeholders, it is critical to understand and address their unique issues and concerns.

For example, research conducted by the eHealth Initiative suggests that the more consumers learn about the creation of secure HIEs, the more they support these initiatives. The HIE message that tends to resonate the most with consumers is that of having access to information in an emergency medical situation, followed by access to medical records when out of state and access to medical records when visiting a doctor.

As such, outreach activities targeting consumers are most effective when they focus on security, how the HIE works, patient permission, who has access, and benefits to both patient and physician. Because consumers overwhelmingly trust their physicians most to deliver them information about secure HIE, it is also highly effective to engage physician champions to lead consumer-facing outreach efforts.⁵¹

Employers, on the other hand, are most concerned about the cost of health benefits and achieving long-term, sustainable savings. Since there are a number of “aggressive and motivated” employer-sponsored initiatives with a local and national presence, as well as private and public sector “value-based” purchasing initiatives, health information exchange as a tool for measuring cost and quality is “not a foreign concept to the more sophisticated employer. Developing an understanding about the way employers see the intersection between quality and cost is essential,” as is recognizing and acknowledging the stewardship role employers play in the selection of health benefits and the business relationship they have with health plans. Taking all this into consideration is key to any successful employer-focused outreach activity.⁵²

Consultants and Compromise

Building community bridges and tailoring the content of outreach activities to focus on unique stakeholder issues and concerns can often be effectively aided by the enlistment of a neutral third party. Many HIEs have found that bringing in an outside consultant or moderator with no ties or biases facilitates more effective, efficient communications among competing stakeholders.

Identifying an individual with solid listening and negotiating skills is essential to the communication process, as they are in the best position to discover new grounds for agreement and identify areas of commonality that will help achieve consensus. A focus should be retained on continued capitalization on the individual differences in stakeholder strengths and expertise that combine to make a stronger information exchange project.

Finally, to successfully manage negative effects of a competitive healthcare business framework and prevent escalation of issues that may threaten the HIE’s progress, a comprehensive plan should be developed that establishes formal and informal, but always regular, lines of communication. The plan should include provisions for active monitoring of stakeholder communications and, most importantly, allow room for compromise.

⁵⁰ Dixon and Scamurra 2007.

⁵¹ eHealth Initiative, *A Majority of Consumers Favor Secure Electronic Health Information Exchange* (2 May 2007).

⁵² eHealth Initiative, *Guide for Engaging Employers in Health Information Exchange Initiatives* (Jan. 2007).

Fostering an ongoing, open dialogue throughout the HIE process allows differences to be resolved quickly and amicably, before they have a chance to weaken the initiative's momentum. Ultimately, "the opportunity to improve health care across the community through shared information far outweighs the risks of collaboration."⁵³

⁵³ Dixon and Scamurra 2007.

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Stakeholder Engagement: Transparency as a Retention Strategy

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"We are on the cusp of enormous change in health and healthcare, both technologically and culturally. And change of this magnitude is never easy. It is always disruptive. It replaces existing paradigms and creates uncertainty. But the level of difficulty should not dissuade us from progress. We must have in healthcare the same level of technological advancement that we embrace in other sectors of society. Getting there will most assuredly upset comfortable routines. It will force entrenched stakeholders to change. And yet it is absolutely necessary, because in the end it will save lives and save money.

*...As industry stakeholders come together in communities across the country, we will find answers to the pressing questions of financing, interoperability, privacy and security, cultural change, and health management. Such a system will indeed improve consumer health, reduce costs, and build a brighter future for America."*⁵⁴

Every facet of the healthcare community—patients, providers, payers, employers and all others—has a stake in the success of the HIE. As such, taking a proactive approach to not just securing, but also maintaining, stakeholder engagement is critical to the initiative's long-term success.

Ongoing stakeholder engagement in an HIE project ensures financial sustainability and fosters the collaboration necessary to achieve both shared and individual goals. It helps overcome cultural resistance to what is, at its core, a significant transformation in the healthcare process, and it strengthens advocacy activities to ensure the public and policymakers are aware of both the benefits of the HIE and activities underway at the community level.⁵⁵

Challenges, however, are inevitable. Disagreements will arise; conflicts of interest will emerge; and differences in tolerance for such factors as risk, competition and innovation can threaten the forward momentum of any data sharing project.

Consider the case of the Western New York Clinical Information Exchange (WNYCIE), an HIE that supports electronic prescribing and results reporting between two HMOs and four hospital systems. The project grew out of initial discussions in 2003 within three different community organizations that were focused on different parts of the regional healthcare system. Despite somewhat different visions, goals and priorities, all three were working toward a single, interoperable network system.

However, negative competition soon emerged, necessitating the implementation of numerous communication strategies to identify and neutralize the issues to retain stakeholder engagement. These included:

- Co-populating boards to support open communication and work toward consensus
- Shared participation in activities of other groups even as individual groups continued working on their own projects
- Establishment of an independent group to allow for ongoing discussions of similarities and

⁵⁴ Center for Health Transformation, *Accelerating Transformation through Health Information Technology: Summary of Findings from the CHT Connectivity Conference* (Nov. 2005).

⁵⁵ Center for Health Transformation 2005.

differences, supported by a facilitator who organized the meetings and served as a neutral third party to assist with maintaining an open dialogue

- Establishment of an oversight committee with representatives from all three groups, as well as representatives recruited from other community stakeholder groups, that held multiple forums to promote ongoing discussions and resolve disagreements, which in turn allowed each group to continue independent activities while staying focused on the overall HIE goals

Those group venues and committees were deployed whenever negative competition emerged and, as they evolved, resulted in each group broadening their stakeholder base. “This ever-widening net of stakeholders helped to forge agreements and mutual influence among the groups. In Western New York, each subsequent committee broadened and strengthened the stakeholder base and reinforced the continued success of this strategy.”⁵⁶

As seen in this example, a strategic communications plan designed for process transparency can mitigate the impact of impediments that can weaken stakeholder commitment and threaten forward momentum. A well-constructed plan will also define the structure of and direction for regular dissemination of information and open, ongoing communication to maintain that transparency.

Without it, the road to long-term viability will be rocky—and littered with former stakeholders who, frustrated by a lack of information or sense of the initiative’s accomplishments, have disengaged from the exchange entirely.

Planning for the Inevitable

An effective strategic communications plan will leverage existing areas of consensus and establish a structure for communicating progress and resolving the conflicts that are sure to arise.

This was the approach taken by the Western North Carolina Health Network (WNCHN), a collaboration of 39 hospitals, 13 county health departments and other providers. Since 1995, hospitals and healthcare systems that served western North Carolina have been working together to implement cost-effective, collaborative opportunities, setting the foundation for trust and positive relationships. Several facilities in the network also utilize the same information system.⁵⁷

In establishing the network, organizers were able to leverage the relationships and trust that already existed among its network members to identify areas for natural collaboration, such as group purchasing and patient quality care initiatives, and areas where the sense of competition was much stronger. In those areas, they found ways to compromise. For example, they found that all participants were willing to share their data as long as the technical architecture allowed each organization to retain control over their own data and store it themselves.^{58,59}

By incorporating those elements of the initiative upon which consensus has been reached—such as Western North Carolina’s compromise over data control—into the larger strategic plan for the HIE, a baseline is created against which stakeholders can measure success. These elements can also be utilized as a means for monitoring competitive areas and mediating any disputes or reversals by stakeholders. The plan should also include a predefined set of milestones and a process for communicating when those milestones are reached.

It is important to note that while the strategy should account for all key areas of consensus, it must also be fluid in order to accommodate future elements that can impact stakeholder engagement and progress.

⁵⁶ Brian E. Dixon and Susan D. Scamurra, *Is There Such a Thing as Healthy Competition? Strategies for Managing Competition between Developing Regional Health Information Organizations*, HIMSS 07 Annual Conference and Exhibition, Ernest N. Morial Convention Center, New Orleans, LA 27 Feb. 2007.

⁵⁷ Western North Carolina Health Network, *About the Network*, [Western North Carolina Health Network](http://www.wnchn.org/wnchn.asp), 5 Sept. 2007 <<http://www.wnchn.org/wnchn.asp>

⁵⁸ First Consulting Group, *Overcoming Ten Non-Technical Challenges of RHIOs* (Oct. 2006).

⁵⁹ Meditech, *Western North Carolina Health Network Steps to the RHIO Forefront*, *Meditech Customer Achievements*, 5 Sept. 2007 <<http://www.meditech.com/AboutMeditech/pages/WESTERNNORTHCAROLINA.htm>

The plan should also establish a means for 'testing the stakeholder waters' on potentially controversial issues to help build a base of information and opinions from which the initiative can draw when it comes time for the governing body to make critical decisions on matters that affect the future of the HIE.

For instance, technology decisions must be made with existing stakeholder systems in mind. But if formal discussions on technology take place too early in the process, it can shift focus away from identifying the HIE business model, governance structure or community value proposition—the establishment of which should actually drive and come before technology decisions. However, by introducing the topic through various communication channels defined in the plan, valuable input can be collected for later use.

The Santa Barbara County Care Data Exchange (SBCCDE) learned this lesson the hard way. Santa Barbara failed, in part, due to a lack of effective communications between project leaders and stakeholders that led to the deployment of technologies that did not address the needs of the end users—a failure that transparency and an open discourse between stakeholders might have avoided. David Brailer, former National Coordinator for Health Information Technology at the Department of Health and Human Services and founder of SBCCDE, offered the following analysis:

The developers of the Santa Barbara Project, including myself, were obsessed with the latest technology, devices, connectivity, and many other technical variables. There was a strong interest in applying peer-to-peer Internet methodologies (for example, Napster-like information sharing) to health care information. This resulted in an over-engineered, overly complicated product that had little regard for how physicians and consumers would use it. Human factors, workflow, and how information fit into the broader goals of the community were not considered. In other words, this was a typical 1990s health IT project. The gap in the Santa Barbara project between the technical imperative and the users' needs was never closed.⁶⁰

The same holds true for expansion of services. Once initial services have been deployed, they must be allowed time to generate returns before further service expansions should be considered. However, by floating the idea of what services are potentially to be rolled out in the long term whenever stakeholders are gathered, or conducting periodic surveys or focus groups, the leadership can begin to gain a better understanding of the direction stakeholders would like to see the HIE go.

Another benefit to this approach is that it can also give them insight into how quickly stakeholders are expecting to realize a return on their investment (ROI). This is important, because while ROI does not appear to be a critical factor in the decision to participate in an HIE and surveys indicate that most stakeholders do not expect any substantial return in the short term, the same cannot be said for the long term.⁶¹

A strategic approach which recognizes that gathering information is often as crucial as disseminating it will be well-positioned to foster stakeholder retention by helping the HIE leadership stay attuned to the short- and long-term expectations and desires of individual stakeholder groups.

Creating Transparency

Ultimately, transparency from the very beginning of the project is critical to retaining stakeholder engagement. The best way to achieve transparency is to centralize information, then build active communication channels to disseminate it in multiple ways, such as 'self-service' access to status updates and bidirectional mechanisms to communicate stakeholder-specific benefits, foster the exchange of ideas and negotiate compromise.

An example of centralizing information is the resource center planned by the Kansas Health Policy Authority (KHPA). The center will be responsible for coordinating and tracking the day-to-day activities of

⁶⁰ David J. Brailer, *From Santa Barbara To Washington: A Person's And A Nation's Journey Toward Portable Health Information*, *Health Affairs [Millwood]* Sept./Oct. 2007: Web Exclusives.

⁶¹ Deloitte Center for Health Solutions, *Health Information Exchange (HIE) Business Models: The Path to Sustainable Financial Success* (2006).

statewide HIE efforts to ensure interoperability between HIEs over the long term, and it will be charged with soliciting input from and seeking the advice of the leadership and workgroup members.

It will also “assist in the removal of common obstacles across the regional HIEs and resolve conflicts between regional HIEs to facilitate equitable and appropriate data sharing for the benefit of patients” through activities that include:

- Offering education on national initiatives and standards
- Acting as a forum for obtaining the input of Kansas HIE initiatives to national standard-setting bodies
- Developing, maintaining and making available a knowledge base of information to assist HIE projects by collecting data and lessons learned
- Developing a reference guide which provides guidance to individuals and organizations undertaking the formation of a regional HIE
- Developing and implementing an education plan to inform key stakeholders about the HIE, recent developments and outcomes
- Developing a marketing and communications plan to raise awareness among stakeholders on the purpose and benefits of HIE, including community meetings, literature and communications campaigns⁶²

Particularly for bidirectional activities, variety in settings and formats is key to ensuring that each stakeholder group is touched. For example, one-on-one meetings with individual stakeholders is an excellent way to reach large participants, such as a major hospital system or health plan, while town hall meetings and community forums are ideal for reaching multiple stakeholder groups or conveying HIE updates and progress reports to the community at large.

More focused meetings with select stakeholder groups are useful when the participants are influenced by peers or stakeholder champions. Physicians, for example, respond well to programs that are conducted in conjunction with hospital systems, medical societies, quality improvement organizations and health plans, as well as direct visits and phone calls.⁶³

It is also critical to identify and recruit community leaders from the industry to advocate for the initiative. Find local physicians, hospital administrators, pharmacists and other providers who are trusted and will champion the project—their words will resonate far more with fellow providers than someone perceived as an outsider.

“The role of messaging to physicians and peer influence cannot be understated as a critical factor for success in engaging clinicians. Part of the messaging and peer influence process is the use of a physician champion. In addition to identified physician champions, there is a tremendous influence realized with ‘unofficial’ strong supporters that become the strong network for physicians throughout the community.”⁶⁴

The Arizona Health Care Cost Containment System Health Information Exchange (AHCCCS) is a good illustration of how bidirectional, audience-specific communication mechanisms can play a key role in retaining—and even expanding—stakeholder engagement.

⁶² Kansas Health Policy Authority, *Kansas Health Information Technology/Health Information Exchange Policy Initiative Final Report*, Feb. 2007, 5 Sept. 2007 <<http://www.khpa.ks.gov/QandI/Docs/Final%20State%20of%20Kansas%20Report.pdf>

⁶³ eHealth Initiative, *Improving the Quality of Healthcare Through Health Information Exchange: Selected Findings from eHealth Initiative's Third Annual Survey of Health Information Exchange Activities at the State, Regional and Local Levels* (25 Sept. 2006).

⁶⁴ eHealth Initiative, *Guide for Engaging Clinicians in Health Information Exchange Initiatives* (Jan. 2007).

AHCCCS held a series of focus groups comprised of physicians, psychologists, nurse practitioners, physician assistants, patient advocates and health plan leaders to help the leadership better understand current practices; identify desired capabilities and data points for an HIE system; identify barriers; and determine how providers could move forward with a new HIE solution. They also convened workgroups to identify next steps, create a roadmap for HIE implementation and select an appropriate technology to be deployed under the project.

As a result, AHCCCS engaged and has retained stakeholders from across the state and is maintaining its commitment to involve physicians in all aspects of planning. Physician involvement has been particularly successful in “articulating problems with the current system, identifying necessary information to effectively treat patients, and describing the ways in which they would like to receive this information. Program officials recognized early on that physician reluctance is a major barrier to HIT adoption. As such, AHCCCS is committed to maintaining provider involvement at all stages of planning. Interviewees indicated that provider outreach will continue throughout implementation to foster support of the HIE project within the physician community.”⁶⁵

As important as bidirectional communication mechanisms are to retaining stakeholders, they cannot provide the full extent of on-demand information that many stakeholders expect in a transparent organization. As such, it is important to also deploy ‘self-serve’ information channels.

The Northern Sierra Rural Health Network, for example, supplemented its regional and community meetings with video teleconferences, email messaging and an HIE website.⁶⁶ Others publish newsletters and establish intranets for secure stakeholder communication.

Finally, the power of the press should never be underestimated when it comes to advancing the understanding of and support for the HIE, whether it is in the form of news releases announcing significant milestones, public service announcements, participation in talk shows or interviews with reporters. Indeed, the media is a critical component of any strategic communications plan, as securing positive coverage will not only convey key messages to a wide audience, but will also broaden the initiative’s reach and raise its credibility.⁶⁷

Long-term stakeholder engagement can be a primary factor in whether an HIE succeeds in achieving sustainability or falters when complications arise. As such, a special emphasis must be placed on creating and maintaining transparency in the process, and ensuring the communications structure and delivery mechanisms are in place to feed stakeholder needs for information upon which to base ongoing support.

⁶⁵ Avalere Health LLC, *Evolution of State Health Information Exchange: A Study of Vision, Strategy, and Progress*, Jan. 2006, 6 Sept. 2007 <http://www.avalerehealth.net/research/docs/State_based_Health_Information_Exchange_Final_Report.pdf>.

⁶⁶ Northern Sierra Rural Health Network, *Implementation Plan for Health Information Exchange*. Presentation to the NSRHN Annual Membership Meeting, Chico, CA 27 April 2007.

⁶⁷ eHealth Initiative, *Connecting Communities Toolkit* (June 2007).

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Establishing Governance: Focus on Sustainability and Community Inclusion

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"An effective governance structure provides the necessary framework for making the many decisions that define and guide the RHIO effort. Because participants come together for different business reasons, it is not surprising that governance models also differ. Someday the industry may arrive at a common roadmap for defining tax treatment, legal identity, organizational structure, charters for the board of directors, and inclusion of stakeholders. But until then, each RHIO must determine which solution best fits its circumstances."⁶⁸

The long-term sustainability of a community-based HIE requires a well-articulated governance structure capable of harnessing leadership and moving the initiative into an operational reality. The structure should be simple, yet effective and adaptable, and consistent with the overriding mission and purpose for establishing the HIE.⁶⁹

The model structure provides an ongoing forum for the potentially competitive constituents of the governing body. An effective governance structure will be able to carry the HIE forward through the inclusion of representatives from all areas of the community. Industry learning indicates that communities will be well-served to pursue governance structures that are both inclusive and neutral.

A successful governance structure will also incorporate the business model upon which the HIE is based and lessons learned from other community-based information exchanges, which can provide a retrospective view of the past to avoid repeating mistakes in the future.

Linking to the Financial Model

The most effective governance structures tend to be those that are tied to the business and financial models under which the HIE intends to operate.

Typically, business model selection is based upon a range of variables, including tax status and incentives, governance and control factors, and whether the HIEs are focused more on coordination, solution development or infrastructure implementation. For instance, while some HIEs exist specifically to foster the sharing of clinical data, others are focused on providing services such as electronic prescribing or results reporting.

"It is expected that each community will explore the different types of HIE business models and pick the one(s) that offers them maximum benefit and return—especially the greatest chance of early sustainability."⁷⁰

⁶⁸ First Consulting Group, *Overcoming Ten Non-Technical Challenges of RHIOs* (Oct. 2006).

⁶⁹ First Consulting Group 2006.

⁷⁰ Deloitte Center for Health Solutions, *Health Information Exchange (HIE) Business Models: The Path to Sustainable Financial Success* (2006).

Four general categories of business models have emerged:

- **Not-for-profit:** Tax-exempt status can help reduce funding challenges and provide special tax credits. However, it also requires operating under strict conflict of interest rules, can create issues with access to capital, limits lobbying activities and carries heightened executive compensation scrutiny.^{71,72}
- **Public utility:** Created and maintained with the assistance of federal or state funds, and provided with direction by the government.⁷³
- **Physician/payer collaborative:** Created for/by certain physicians and payers within a geographic region. These can be either for- or not-for-profit; the key is the collaboration between and mutual benefits for participating payers and physicians.⁷⁴
- **For-profit:** Created with private funding and having firm return on investment (ROI) targets, for-profit initiatives seek to achieve financial benefits from their transactions and typically have solid start-up funding.⁷⁵

Additionally, HIE initiatives typically rely on a combination of three types of revenue sources. The business model can both impact and be impacted by the revenue source, as variations in income classification often depend upon legal and accountancy advice, statutes and regulations, form of incorporation, and IRS determination:

- **Contributed income:** Cash or in-kind resources such as grants from governments and private philanthropy, as well as in-kind grants such as facility usage. In fact, 84 percent of revenue in start-up HIEs falls within this category.⁷⁶
- **Earned income:** Payments received for services or privileges, such as transaction fees and membership/subscription fees representing volume-based pricing and flat pricing, respectively. Transaction fees make up 8 percent of total income in production HIEs, while membership fees accounted for 28 percent of total income.⁷⁷
- **Loans, other repayable assets and investor proceeds:** Cash and in-kind resources that were loaned and must in some way be repaid or that were received from investors in exchange for equity ownership of the organization. Investor proceeds in exchange for equity are not available to 501(c)(3) tax-exempt organizations. However, not-for-profit organizations may participate in for-profit enterprises that, subject to very specific and detailed limitations, may partner with investors.⁷⁸

The earned income model, particularly in the form of a combination of membership and transaction fees like the one employed by the Utah Health Information Network (UHIN), appears to hold the most promise for long-term financial sustainability. Founded in 1993, UHIN has been self-sustaining from its inception by charging a membership fee to providers and transaction fees to payers. This has allowed UHIN to cover all operational costs for its administrative data exchange and positioned it to expand services to include the electronic exchange of clinical information through a secure Internet gateway.⁷⁹

In many ways, it is the funding model that plays the greatest role in determining the most effective governance structure. For example, if the HIE is funded through grants and/or stakeholder contributions, the best approach may be to establish a governance structure in which the HIE is steered by classes of

⁷¹ Deloitte Center for Health Solutions 2006.

⁷² William S. Bernstein and James R. Schwartz, *Governance and Regulatory Issues*, Presentation to the CalRHIO Governance Committee, Oakland, CA 19 July 2005.

⁷³ Deloitte Center for Health Solutions 2006.

⁷⁴ Deloitte Center for Health Solutions 2006.

⁷⁵ Deloitte Center for Health Solutions 2006.

⁷⁶ Michael Christopher and Martin Jensen, *Sustainable RHIO Funding and the Emerging Business Model: The 2007 Survey of Regional Health Information Organization Finance* (Sept. 2007).

⁷⁷ Christopher and Jensen 2007.

⁷⁸ Michael Christopher, *RHIO Financial Models*, 17 April 2006, 14 Sept. 2007 <http://www.informatics-review.com/wiki/index.php/RHIO_Financial_Models

⁷⁹ Avalere Health LLC, *Evolution of State Health Information Exchange: A Study of Vision, Strategy, and Progress*, Jan. 2006, 6 Sept. 2007 <http://www.avalerehealth.net/research/docs/State_based_Health_Information_Exchange_Final_Report.pdf

stakeholders designated by their level of involvement, possibly with different levels of voting rights based upon their contributions.

Alternatively, if the HIE is funded through transaction or subscription fees, a public utility model that provides governance for public accountability of private businesses may be the most appropriate structure. However, if financing is coming from private investment, a board of directors is often the best governing model to follow.⁸⁰

By mapping the governance structure to the business model, the final governing body will incorporate the strengths of each stakeholder organization and provide the appropriate level of consideration to each group's incentives for participating in the HIE.

An Inclusive, Neutral Structure

In addition to relating back to the business and financial models that will drive the HIE, the governance structure should be inclusive of key stakeholders, yet still maintain a high level of neutrality. An inclusive, neutral governing body is better able to maintain a clear focus on shared community goals while avoiding or mitigating potential conflicts among stakeholders.

This is important, as HIEs are typically made up of diverse organizations that must come to agreement on critical—and potentially divisive—issues such as protocols for patient identification and data transfer, data standards, rules for authentication, and access and data maintenance. “One of the critical success factors for a governance structure is to involve the key stakeholders in a forum that develops a neutral environment of win-win for all.”⁸¹

Three popular options for the governance model are all-inclusive membership, classes of membership and independent/self-perpetuating.

Under the **all-inclusive model**, each participating provider and other interested parties, such as payers, self-funded employers, regional health authorities and public health agencies, are invited to join. In some instances, membership on the governing board is limited to those who make a financial investment as part of their commitment.

The classes of **membership model** has categories of interested participants divided into “classes,” which then select one or two representatives for the governing board. The initial class representatives can be selected by the Executive Steering Committee (see Chapter Three of the *Best Practices for Community Health Information Exchange*) or by members of each individual class. This model is ideal to support fee-based membership as a source of funding. However, differences among membership groups may impede decision making progress.

Finally, the **self-perpetuating model** typically starts with the Executive Steering Committee selecting the initial board members. Terms may be staggered and subjected to limits, and a nominating committee would be responsible for proposing board candidates on an ongoing basis. The advantage of this model is that it is large enough to be representative of all stakeholders but is still manageable. The drawback is that the limited size often necessitates other means of ensuring inclusive participation.⁸²

Whichever governance model is determined to be the best fit for the individual HIE, special attention must be paid to ensure it is *truly* inclusive. For example, a special emphasis should be placed on including physicians who represent multiple types of medical specialties. This is important not only because physician adoption of the HIE is critical to its long-term success, but because physicians control the longitudinal patient record, which is the cornerstone of the HIE and the fundamental future of healthcare.

⁸⁰ Deloitte Center for Health Solutions 2006.

⁸¹ Healthlink, *Regional Health Information Organization (RHIO): Frequently Asked Questions* (Sept. 2005).

⁸² Bernstein and Schwartz 2005.

The responsibility of physician representatives as part of the governance structure should be to inform, advise, watch behavior change and track medical compliance—all of which relate back to the success of the initiative.

Also, because healthcare workflow is a multidomain challenge, the governance structure should include representatives from all domains, which are most often defined as:

- Clinical, which includes physicians, nurses, ancillary service providers and other allied health professionals
- Technical, representing IT professionals and medical device experts
- Operations, including clinical and technical support and help desks
- Administration, which encompasses workflow, admissions and IT management
- Financial, which incorporates reimbursement and funding

Other key representatives to consider include patients, employers and payers, as well as individuals who bring specific expertise to the structure, such as government agencies, health information management professionals, health law attorneys and privacy experts.⁸³

Ultimately, the governance model should be populated with representatives who are capable of making the decisions necessary to ensure the HIE is able to adapt to “changing market dynamics and... overcome new obstacles as they provide more and varied services to their customers.”⁸⁴

Creating Structure

Once the formal governance model has been determined, a hierarchy of committees, subcommittees and advisory groups should be established under the direction of the Executive Steering Committee defined in Chapter Three of the *Best Practices for Community Health Information Exchange*.

Typical standing committees include Audit, Business/Finance, Governance/Nominating, Compensation and Operations, which are charged with overseeing specific functions required to keep the HIE moving forward toward long-term success.⁸⁵

Many HIEs also establish a separate Community Advisory Board, which encompasses the Outreach Committee defined in Chapter Three but expands its outreach responsibilities to include engagement of the public at large. It is also responsible for development of a decision-making process that aligns incentives and ensures adherence to the strategic roadmap from the clinical, financial and social perspectives by addressing the needs of those organizations that tend to provide the most financial support for the least immediate benefit.

For example, hospitals pay for electronic health records that sometimes offer limited value and, in many cases, no continuity of care, and have low physician usage levels after implementation. In this case, patients stand to be the real benefactors of the technology investment, but they make little or no contribution to the HIE. “This creates an imbalance between those who pay for the system and those who benefit. In order to keep incentives in line, the remaining stakeholders, such as providers and payers, can find ways to pass on some of the operating costs in the form of fees or surcharges.”⁸⁶

It is the responsibility of the Community Advisory Board to identify ways to balance out these inequities to ensure all stakeholders will realize benefits in the long term.

Another key subcommittee is a physician advisory group that is specifically focused on clinical issues, such as what type of data should be shared. This is critical to ensuring physician adoption of the HIE and

⁸³ Robin Blair, *RHIO Nation, Health Management Technology*, Feb. 2006.

⁸⁴ Deloitte Center for Health Solutions 2006.

⁸⁵ Bernstein and Schwartz 2005.

⁸⁶ First Consulting Group 2006.

helping patients feel comfortable that the clinical issues related to data exchange have been thoroughly discussed and vetted. Other committees to consider include a regulatory committee to manage issues pertaining to Stark and anti-kickback laws, antitrust laws, and privacy and security laws, as well as quality/oversight, public relations and marketing, incentives, and consumer participation/patient advocacy^{87,88}

Keeping Focus on the End Game

Ultimately, the responsibility for achieving the 'end game' of the HIE lies with the governing body. As such, it must fully represent all facets of the community, and it must be structured in a way that allows the HIE to achieve community and stakeholder goals, as well as widespread provider adoption. Without that, its efforts have "been reduced to an academic exercise."

If an HIE "is to ever break out of the 'demonstration project' box, it must be *inclusive*. If it's a 'community project,' then it needs to involve the whole community or at least be structured so that everyone in the community can participate if they elect. If the vast majority of providers in the community are unable to participate in a RHIO, then they will take no ownership of it."⁸⁹

A very real risk that should be recognized and considered is the natural tendency for the largest organizations that are investing the most in the project to inadvertently develop a structure that offers only proprietary interoperability. In this case, the vast majority of providers in the ambulatory environment who deliver the bulk of patient care in the community are left out. A clear contingency plan to help avoid this problem is to include healthcare professionals from organizations of all sizes and financial contribution to the program in the initial design.

Success requires a community-based governance model that represents every facet of the healthcare community and strikes a balance between benefits and contributions while remaining neutral to prevent politicization at any stage of development.

⁸⁷ Bernstein and Schwartz 2005.

⁸⁸ Heather B. Hayes, *RHIO confidential: Experts offer advice for creating a foolproof privacy and security plan for sharing patient information*, Government Health IT, 10 Sept. 2007.

⁸⁹ ProviderLink Incorporated, *Designing RHIO's that Work: Five Pillars for Broad Provider Adoption* (July 2005).

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A Practical Roadmap: Charting Milestones to Demonstrate Success for Sustained Community Buy-In

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"If the value of a RHIO is demonstrated to its community, the market will ensure its financial viability."⁹⁰

While most health information exchange (HIE) initiatives have extensive action plans guiding their implementation, many have been forced to close their doors after launch. An important differentiator between HIEs that have failed and those that have thrived is a set of well-defined objectives.

The key to achieving sustainability and functionality is translating objectives into a community roadmap. The roadmap is comprised of well-defined milestones that form the foundation of a formal plan of execution. It provides the initiative's leadership with the strategic and tactical direction necessary to identify and manage shared goals related to the agreed-upon clinical, financial and community objectives.

For the community, a well-designed roadmap is a vehicle that tracks progress, highlights successes and demonstrates leadership's commitment and accountability to the initiative. It serves to solidify community buy-in and secure the ongoing stakeholder support necessary to keep the project moving forward.

Defining the community roadmap is a four-step process that includes:

- 1) Establishing the roadmap team
- 2) Creating a set of key milestones that reflects the high-level turning points of the execution plan. This includes specific deliverables and clearly defined measures that apply across the stakeholder spectrum. Milestones should highlight those elements that the community has determined best represent success.
- 3) Establishing the timeframe for achieving the milestones, including accountability, data sourcing and reporting responsibilities.
- 4) Creating a communication plan so that the community is kept well-informed of the status of progress made on the HIE roadmap.

It is important to ensure that the community's involvement does not become passive during the roadmapping process. Just as it is critical to involve the community in the establishment of the high level goals of the HIE, it is also critical to maintain that involvement in the development of the milestones included in the roadmap.

Community involvement helps assure that key milestones are meaningful and relevant. In addition, because the lay community is less likely to be familiar with details regarding the technical, clinical or financial considerations of the initiative, its involvement serves as a rational and balanced sounding board for the initiative in development of the roadmap.

⁹⁰ Center for Health Transformation. Accelerating Transformation through Health Information Technology. November 28, 2005.

Step One: Establishing the Team

Diversity is an important element of the community roadmap team. Team members should represent the full array of stakeholders throughout the community as a whole. This team – and comprehensive representation – is critical because it will be responsible for not only developing the milestones against which progress will be measured, but also for monitoring and reporting that progress.

Team members should represent at minimum:

- Providers
- Payers
- Patients
- Ancillary services
- Community-based and government agencies
- Employers

Step Two: Creating the Milestones

With the team in place, the next step is to develop and achieve consensus on a set of key milestones that define the success of the initiative. These milestones must be relevant to stakeholders and the community as a whole. Most importantly, they must be tangible, clearly defined, measureable and trackable.

A good starting point for the community roadmap team is to develop a series of questions designed to achieve a clear definition of what best demonstrates success for the stakeholders and community, and how that can be measured. For example:

- What are the overarching objectives of the HIE?
- What milestones would demonstrate successful achievement of those objectives?
- What specific deliverables define achievement of those milestones?
- Are those deliverables tangible?
- How can those deliverables best be measured?
- What are the sources of data or other information that will be used to track those deliverables?
- Who is responsible for collecting and analyzing that data?
- How often should the results be reported to ensure accuracy and clarity?

Common early milestones are process focused and include securing funding, identifying the technology strategy and vendor selection. Milestones for later phases of the initiative typically focus on deployment of an interoperable infrastructure/architecture, signing of data exchange agreements with key providers and the launch and conclusion of a pilot data exchange. Post-deployment milestones are metric and outcome focused and typically include community adoption rate, clinical impact and operational efficiency measures related to the HIE.

Two important elements of milestone development are:

- 1) Keeping the number of milestones manageable. Too many milestones, or milestones that are too complex, can backfire by making it impossible to clearly measure successful achievement or cause too much time to lapse between establishment and achievement.
- 2) Soliciting and responding to feedback from all stakeholders. Proposed measures should be shared with the entire HIE community. The community roadmap team is responsible for thoughtfully considering comments and revising milestones appropriately. While not all ideas can be included in the roadmap, there should be a response to any stakeholder offering feedback.

One example of effective milestones can be found at PeaceHealth, an HIE which serves medium-sized and rural communities in Alaska, Washington and Oregon. PeaceHealth, which built a comprehensive community health record (CHR) spanning both in- and outpatient environments, succeeded in managing the culture change involved with moving from a non-automated environment to one that is almost

completely paperless in large part by clearly defining and achieving buy-in on those metrics that measure the initiative's quality and efficiency improvements.

Among PeaceHealth's milestones were a 20 percent improvement in patient cycle times in clinics, yielding greater medical group productivity; a 50 percent reduction in nursing documentation time in some inpatient units, giving nurses more time to spend on direct patient care; and surveys that show nurse and physician satisfaction with the CHR has increased significantly since the technology activation.⁹¹

Step Three: Establishing Timeline and Accountability

The third step in the community roadmap process is to set the timeline and establish accountability for each milestone. This makes it very clear where primary responsibilities lie, letting the community know who is responsible for achieving specific deliverables. Clear accountability also offers the opportunity to reward and acknowledge achievement and success.

One methodology for assigning accountability is to employ a RACI diagram to describe the roles and responsibilities of various stakeholders or participants in advancing the HIE. The RACI diagram splits tasks into four participatory responsibility types:

- **Responsible:** Those who do work to achieve the task. There can be multiple resources responsible.
- **Accountable:** The resource ultimately answerable for the correct and thorough completion of the task.
- **Consulted:** Those whose opinions are sought.
- **Informed:** Those who are kept up-to-date on progress.

Summary: Overarching Projects	MD Champion	MD Committee Members	Program Manager	Advisory Board	Finance Committee	Legal Counsel
Physician Engagement	A	R	C	R		
Communication Framework	R	C	A	R	C	C
Privacy Policies	R	C	C	R		A
Financial Structure	C	C	R	R	A	C
Technical Infrastructure	I	I	A	C		
Vendor Management	I	I	A	C	C	R

⁹¹ CHT. November 28, 2005.

Each type is then assigned to different roles in the project or process. The recommendation is that each role for each task be assigned to just one participatory responsibility type. The exception is that roles specified as “accountable” may also be specified as “responsible.”⁹²

It is also necessary to establish baseline information against which to measure progress, as well as timelines to achieve defined milestones. Organizations have taken several different approaches to establishing benchmarks.

The Vermont Information Technology Leaders (VITL) established its benchmarks against the eHealth Initiative’s *Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations* to produce a comparable view with like projects nationwide. In doing so, the organization noted that “the benchmark produces a matrix for comparison as VITL continues to grow and will ultimately be of importance as an evaluation tool for the progress of the continuing endeavor.”⁹³

Step Four: Creating a Communication Plan

The final step in the process is to create a communication plan that shares the roadmap with the community. The communication plan is not a single set of events, but rather an ongoing set of activities that keep the community informed of the ongoing progress of the project throughout the course of the initiative.

The communication plan should include strategies for conveying information both internally to HIE stakeholders and participants and externally to the community as a whole. It should encompass a number of basic elements:

- Key messages: the common themes and information that will be conveyed consistently throughout all communications, i.e. that the HIE will improve care and reduce costs by facilitating the flow of information between community providers.
- Methods of communicating: the means by which information on progress, successes and key messages will be delivered to target audiences, i.e. the media, town hall meetings, web portals, mass mailings, advertisements. When possible, the methods should include a two-way communication process that allows for stakeholder and community feedback.
- Materials: the form the communication will take, i.e. press releases, newsletters, news stories, brochures, letters, emails, presentations, etc.
- Timing: the point at which communications will be triggered, such the establishment of milestones, achievement of milestones, quarterly progress reports, etc.
- Source: the team member responsible for executing the communication plan, preferably someone who can also act as the primary spokesperson for the HIE (although multiple team members should be tasked with presentations to avoid burn-out)

In order to achieve community buy-in and momentum around the HIE, progress and success should be communicated as early as possible, even before quantifiable data and metrics are available. One simple, yet effective, strategy to communicate success of an HIE is to share anecdotal stories that highlight examples of how the HIE can broadly impact the community when it is fully implemented. These stories can also provide a guide for the creation and publication of anecdotes that demonstrate what success looks like in the “new world.”

Finding these anecdotes can be as simple as asking the community for examples. One managed care organization developed an email survey to determine whether or not personal health records (PHRs) had impacted someone’s health. More than 300 responses were received, including one from a woman with a debilitating illness. She was taking more than 20 different medications and was under the care of multiple physicians. However, it was not until she took her PHR to one of those physicians that they were able to

⁹² Wikipedia contributors, 'RACI diagram', *Wikipedia, The Free Encyclopedia*, 28 January 2008. Available at http://en.wikipedia.org/w/index.php?title=RACI_diagram&oldid=187445408

⁹³ Kastensmith, Hans C. “VITL National Benchmark Report.” Capitol Health Associates LLC. Presented to the State of Vermont Healthcare Reform Committee. January 22, 2006.

determine that her chronic fatigue was caused by the interaction of two medications that had been prescribed. As a result, they were not only able to resolve her fatigue issues, but the physicians were also able to devise a care plan strategy for managing future prescriptions among the team. Sharing this story demonstrated how PHRs could identify and help resolve patient safety issues that could have debilitating effects

In another example, the Nebraska Statewide Telehealth Network demonstrated its potential to both respond to crises and transform patient care during several key events. First, during Hurricane Katrina, clinicians used the system to communicate with their peers across the state in response to the request for medical volunteers to travel to Louisiana. The second involved the tiniest baby ever born at Saint Elizabeth Regional Medical Center in Lincoln, Neb. Born four months early and weighing just 13 ounces, the baby remained hospitalized at the medical center for four months. Through use of the Network, the baby's hometown physicians, located a significant distance away, were able to consult with neonatologists at Saint Elizabeth, and the baby's mother was able to more easily arrange support services for her family and communicate with family members. Today, Saint Elizabeth medical staff regularly holds videoconferences with families and doctors of infants with specific medical needs who reside outside the Lincoln area.⁹⁴

Technology can also be used to enable the communication plan. MA-SHARE (Massachusetts Simplifying Healthcare Among Regional Entities) utilizes an Internet portal to keep its internal audiences informed of the initiative's progress and to solicit feedback as it re-evaluates strategies to maximize stakeholder priorities and community-supported initiatives.⁹⁵

For CalOHI and CalRHIO, RTI International utilized electronic communications including a web forum and emails to project team members to solicit input from those who were unable to attend meetings, providing a way for all stakeholders to make reliable contributions to the planning process.⁹⁶

The plan should leverage local media as a key resource for sharing highlights of the communication plan with the community. One successful tactic for keeping the media engaged is to collaborate with them to establish a single compelling measure for the initiative that serves as a "barometer" for the progress being made. The eHealth Initiative's "Connecting Communities Toolkit" includes valuable information on working with the media as part of an overall communications plan, including:

- Developing key messages that resonate with internal and external audiences.
- Limiting messages to just one or two simple, yet compelling points.
- Understanding what the press is looking for when covering the HIE.
- Having background materials prepared in advance.
- Developing ongoing relationships with the media.⁹⁷

Demonstrating Relevance, Value

By developing a community roadmap for clinical data exchange, complete with accountability indicators for various constituencies, HIE leadership can ensure the initiative is not only relevant but that its value can be demonstrated through tangible results that clearly convey its success.

While we have discussed various strategies and provided multiple examples of how other initiatives have approached the creation of their own roadmaps, there are other valuable resources HIE leadership can tap for guidance. eHealth Initiative offers a comprehensive "Connecting Communities Toolkit" that provides a wealth of tools and information for HIEs to follow.

⁹⁴ CHT, November 28, 2005.

⁹⁵ Stone, Diane L. "Next Steps with Established HIEs, Massachusetts." RTI-HISPC National Meeting. March 5-6, 2007.

⁹⁶ CalOHI & CalRHIO California Team. April 16, 2007.

⁹⁷ eHealth Initiative. "Connecting Communities Toolkit: Communication and Outreach. Working with the media." Available at http://toolkit.ehealthinitiative.org/communication_and_outreach/media_outreach.msp

Various consulting firms also offer services for developing effective roadmaps. In addition, there is published literature available online and through focused on helping advance HIE at the local, state, regional and national levels.

Whether or not any guidance is solicited from these organizations, the creation of a community roadmap is absolutely imperative to the ongoing success of the HIE. It provides the tools for overcoming the cultural issues and barriers that can put a stop to forward progress, and spells out the milestones and timelines that the entire community agrees are indicative of success.

As the Center for Health Transformation notes in *Accelerating Transformation through Health Information Technology*: “Change is never easy. It is always disruptive. It replaces existing paradigms and creates uncertainty. But the level of difficulty should not dissuade us from progress. If that were the case, we would never have entered the industrial age in the 19th century, or landed on the moon, or created the interstate highway system...We must have in healthcare the same level of technological advancement that we embrace in all other sectors of society. But getting there will upset comfortable routines. It will force entrenched stakeholders to change. And yet it is absolutely necessary because in the end it will indeed save lives and save money.”⁹⁸

⁹⁸ CHT, November 28, 2005.

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Adopting a Business Mentality: A Sustainable Model for Long-Term Success

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"Perhaps it might be a bit "Zen" (or Dickensian)—sounding to say it, but from all the evidence at hand, now may be both the best of times and the worst of times for regional health information organizations (RHIOs). For while more RHIOs than ever have sprouted up across the country (no one can say definitively how many RHIOs exist, but there are certainly dozens in at least the initial stages of development), many seem to be in trouble or struggling, and a number have already shut down operations."⁹⁹

While it may be a simplified statement, it can be said that a solid, sustainable business model is the most essential factor in the long-term viability of any health information exchange (HIE) initiative. It also remains one of the most significant challenges faced by initiative leadership, thanks in part to a reimbursement system that predominantly rewards both volume and fragmentation and serves as a disincentive for sharing health information across healthcare stakeholders.¹⁰⁰ However, developing a business model that will lead to sustainability is absolutely possible and should be among the first steps any organization interested in health information exchange takes.

In 2007, 56 percent of respondents to an annual survey of self-described HIE initiatives cited the development of a sustainable business model as very difficult—a 12 percent increase from the previous year—and 35 percent considered it to be moderately difficult.¹⁰¹

As difficult as it may be, development of a sustainable business model is critical if a health information exchange is to survive after initial funding, which most often comes in the form of federal or state grants or contracts, dries up. That was the lesson the Portland Regional Health Information Organization (RHIO) learned the hard way, after spending more than \$500,000 on planning.

The Portland RHIO, an effort backed by the business community, planned to develop a Web-based portal and a record-locator service that would provide a clinical messaging service connecting hospitals and physicians in the 1.6 million-population Portland, Ore., metro area. However, the board overseeing the project voted not to go forward with a \$17 million, five-year funding plan, leaving the initiative in a state of limbo.¹⁰²

The good news is that HIE initiatives are continuing to mature. In 2007, there were 32 fully operational initiatives, up from 26 in 2006. Of those, three quarters had weaned themselves off grants and other

⁹⁹ Hagland, Mark. "From Struggles to Success." Healthcare Informatics. September 2007. Available at <http://www.healthcare-informatics.com/ME2/dirmod.asp?sid=&nm=&type=Publishing&mod=Publications%3A%3AArticle&mid=8F3A7027421841978F18BE895F87F791&tier=4&id=AE404FB40DFE434B91B79D9C2AD6BF50>

¹⁰⁰ eHealth Initiative Press Release. "eHealth Initiative Releases Results of 2007 Survey on Health Information Exchange." December 19, 2007. Available at <http://www.ehealthinitiative.org/news/2007HIESurvey.msp>.

¹⁰¹ eHealth Initiative. "Fourth Annual Survey of Health Information Exchange at the State, Regional and Community Levels: Summary of Key Findings." Dec. 19, 2007. Available at <http://www.ehealthinitiative.org/2007HIESurvey/>

¹⁰² Modern Healthcare Online. August 30, 2007.

sources of seed money and were no longer dependent on “non-operating revenues” to support ongoing operations for services such as results delivery.¹⁰³

As a result of this maturation, several business models have evolved that have proven effective at moving an HIE toward long-term sustainability.

Proven Models

To succeed, stakeholders and leaders within the health information exchange initiative must adopt a business mentality. They must design a business model that takes into consideration local needs and requirements, which will go a long way toward earning the trust and commitment of the local entities that will be called upon to share information across the exchange.

Although there is no “one-size-fits-all” business model for HIE, there are several that have already established a track record of success for their communities:

- **Membership/Subscription Fee Model:** Stakeholders pay to support shared services. In some versions, membership fees are equal for all participants. In others, fees are tiered depending on certain criteria, such as facility size or volume of use. This particular model requires careful consideration of how to set up participation based on the relative value each participant expects to derive. It is also important to secure commitments from a critical mass of members to ensure financial success.
- **Transaction Fee Model:** A fee is charged for using the products and services offered by the HIE. Because up-front fees are not being generated, the transaction model requires seed or start-up funding, typically in the form of investment capital or grants, to build the infrastructure necessary to provide services.
- **Program and Service Fee Model:** Stakeholders are charged to participate in program-related activities undertaken by the initiative (ex. fees for creation and implementation of group purchasing arrangements).
- **Combination of Models:** Because one single model may not cover long-term expenses, a fourth model is a combination of financial models to achieve sustainability. For example, membership fees could be charged to generate core funding on a steady basis, then coupled with transaction fees to supplement those dollars when services are initiated.¹⁰⁴

The Taconic Health Information Network and Community (THINC), an HIE network of physician services, deployed the Membership/Subscription Fee Model when it began providing services, including standardized electronic health records (EHRs) development; email access to physicians, staff and patients; electronic prescribing capability; and related technical support services. Hospitals and reference labs pay a monthly fee for data transfer into the system, and physicians pay a monthly subscription fee to utilize the various applications.¹⁰⁵

HealthBridge, a not-for-profit HIE serving the Greater Cincinnati tri-state area, also deployed the Membership Fee Model with much success. Currently, HealthBridge represents 95 percent of the community’s hospital sector activity, and has participation from physicians, health departments, nursing homes, independent labs and radiology centers. It provides access to more than 60 hospital-based critical care systems and operates the largest community-based secure clinical messaging system in the country, delivering more than 1.4 million results to more than 4,000 physicians each month.¹⁰⁶ Launched in 1997, by 2005 the monthly dues of HealthBridge’s hospital members were covering 80 percent of its annual

¹⁰³ Marchibroda, Janet M., “Review of Health Information Exchange Initiatives and RHIOs: Reasons for Failure and Success.” A report to the Center for Community Leadership. February 6-7, 2008.

¹⁰⁴ Foundation of Research and Education of AHIMA. Development of State-Level Health Information Exchange Initiatives: Final Report. September 1, 2006. http://www.staterhio.org/documents/Final_Report_HHSP23320064105EC_090106_000.pdf

¹⁰⁵ Agency for Healthcare Research and Quality National Resource Center for Health Information Technology. “Establishing a Business Case for Health Information Exchange (HIE): Findings from the State and Regional Demonstrations in Health Information Technology Regional Meeting.” November 8 – 9, 2005.

¹⁰⁶ HealthBridge. “HealthBridge Profile.” Available at http://www.healthbridge.org/index.php?option=com_content&task=view&id=5&Itemid=6

operating budget, with the remainder coming from access fees paid by transcription and billing companies.¹⁰⁷

The Indiana Health Information Exchange (IHIE), as another example, launched its clinical messaging services in 2004 with the assistance of local hospitals and federal grants, which provided seed funding. It has since become self-sustaining thanks to the Transaction Fee Model. IHIE charges user fees to participating hospitals, laboratories and other major data sources, while physicians can access the information free of charge.

The Utah Health Information Network (UHIN) offers a centralized health data transaction system over which standardized electronic claims are transmitted from providers to payers and standardized remittance information from payers to providers. It has become self-sustaining using a combination of business models, with all participants contributing to support the infrastructure. Members pay an annual subscription fee, with the amount based on the size and type of the organization, while a per-transaction fee is charged to clearinghouses.¹⁰⁸

Recent research has also identified two emerging models: a grant-supported capital base upon which an infrastructure for earnings to sustain operations is built, and a “zero entry cost” model designed to speed adoption by a critical mass of providers by allowing them to participate with no financial contribution.¹⁰⁹

The common threads between these business models are very specific goals and visions, collaboration across the community, tangible value propositions, and revenue streams that are not dependent on handouts from donors or the government.¹¹⁰

Developing a Sustainable Model

There are several critical phases in developing an appropriate, successful business model—a process that is laid out in the eHealth Initiative Value and Sustainability Model and Tool Suite.

The first is to assess the environment in which the initiative will operate, the goal of which is to define the region to be served, determine the rate of EHR adoption, identify any historical trends toward collaboration and ensure that the preliminary services identified as priorities are, in fact, appropriate.

The challenge is finding the right combination of services that provide quantifiable value to all planned participants in an HIE. This is accomplished by evaluating the services the HIE will provide against the value that can be derived at a very granular, customer-specific level. For example, will the services reduce the cost of doing business? Will they replace higher-cost services or increase efficiency?

Too often, an initiative's leadership is distracted by the high degree of difficulty involved in properly assessing the environment, and winds up prioritizing services based on less than optimal justifications, such as lack of controversy or in response to the desires of influential participants.

However, health information exchange projects that are truly determined to build a self-sustaining business model will ensure that the best combination of services is pursued, regardless of the challenges doing so presents. By evaluating priorities against an analysis of producers and users of data and value, the structure of the business model will begin to emerge.

“By documenting the components of each functionality, start-up HIEs are forced to confront the foundational impact of preliminary prioritization. Conceivably an HIE might change its priorities based on

¹⁰⁷ Baldwin, Gary. “Sharing the Data Bridge.” HealthLeaders. July 2005. Available at <http://www.healthbridge.org/downloads/HealthLeaders-2005-07.pdf>.

¹⁰⁸ Davies, Jac. “Financing the Mature RHIO.” The RHIO Wiki. Available at http://www.socialtext.net/lite/page/rhiowiki/financing_the_mature_rhio

¹⁰⁹ Christopher, Michael and Jensen, Martin. Sustainable RHIO Funding and the Emerging Business Model: Annual Survey of Regional Health Information Organization Finance. September 2007.

¹¹⁰ Healthcare Informatics. September 2007.

this process. Prioritizing market demand for functionalities provides HIEs with a foundation for the next step of gathering relevant details for net present value calculations to support HIE business models.”¹¹¹

The second step is to establish a realistic budget that effectively allocates available resources. This includes not only anticipated revenues and operating expenses, but also consideration for appropriate levels of marketing.

To calculate the budget, consider the current operating costs borne by the healthcare community. This can be accomplished by gathering key data, including:

Transaction volume for uncompensated procedures
Payer/provider payment rates for certain procedures
Range of estimated duplicate procedures (lab and radiology) on a region-wide basis
Percentage of procedures for which no reimbursement is received
Uninsured population characteristics and associated costs
Hospital baselines: bed size, ER visits or operations, annual revenue, FTE, etc.
Range of estimated benefits per ED visit ¹¹²

That data can then be used to determine the revenue, cost and risk implications:

- Revenue implications may be static if a membership fee model is assumed, otherwise they become a progression of moving from initial operations to an expected destination of significant reliance upon transactional fees.
- Cost structure can vary significantly based on different types and timing of technology platforms, connectivity issues, scale of staff required to support, governance model assumed, etc.—all of which are specific to each HIE and the environment in which they operate.
- Risk is measured through estimating and quantifying operating risk, market risk and execution risk.

While this step may be arduous, it is ultimately worth the trouble because it provides the HIE with the opportunity to address the decisions being made about revenues, costs and risk. At the end of this step, the information exchange will have a clear definition of the market it will be serving and the priority services it will provide. Community data should also have been gathered for the calculation of net present value (NPV) and for the accumulated revenue, cost and risk implications for the potential paths to self-sustainability.

“This information by itself is much more than most HIEs have ever had. However, the next step of calculating the net present value for each potential path...is critical and provides the basis for a quantifiable way to create financial projections.”¹¹³

The calculation of value for each potential path is critical and provides the initiative with the basis for a quantifiable way to create financial projections. There are several key implications for value and how it is calculated:

- Value, as it directly accrues to the HIE, needs to be defined as executive compensation packages and incentives that would be strongly tied to such metrics.
- Any determination of value of the HIE will need to incorporate suitable measures of risk so that initial investors can evaluate appropriate funding levels and metrics against which to measure an HIE’s future performance.
- Value needs to be understood at the stakeholder level in terms of quantifiable returns and must be calculated and understood not only for the stakeholder class as a whole, but for individual entities as well.
- Value must be understood for pricing decisions. In order for value to be used for pricing, value must be understood at the individual functionality level.

¹¹¹ eHealth Initiative. Summary of the eHI Value and Sustainability Model and tool suite: Market Readiness Assessment Tool Risk Estimation Tool Value Tool Business Plan Pro Forma Tool. May 2007.

¹¹² eHealth Initiative. Summary of the eHI Value and Sustainability. May 2007.

¹¹³ eHealth Initiative. Summary of the eHI Value and Sustainability. May 2007.

- For the management team to focus on the priorities of the HIE's business, they need to not only understand the value to the HIE overall, but also what the key drivers of each component of value are and how they are mapped out over time.

Performing this level of value calculation requires use of a sophisticated modeling instrument, such as the eHealth Initiative Value and Sustainability Model, which was developed under a grant from the Health Resources and Services Administration.¹¹⁴

Plan for Future Support

A final, critical element of developing a sustainable business model for HIE is to plan for ongoing financial support beyond any initial grant money that may be seeding the project. These funding sources will most likely dry up within a few years, necessitating the generation of revenues to fund operations.

The reality is, relying on grants and stakeholder contributions will produce a “fragile financing platform unable to sustain itself and innovate over time.”¹¹⁵

As such, it is critical to begin identifying potential sources of funding to help cover the cost of operations until revenues have reached sufficient levels. Although they are not typically candidates for venture capital or private equity investments, HIEs would do well to model their approach to funding after the expectations of these markets as a way to demonstrate that the initiative is truly on the path to self-sustainability.

This includes waiting until the sustainable business model is complete and committed to paper before submitting applications for grants or other funding, as many prospective investors require this for consideration. An initial market assessment may also be required, as well as letters of support from influential members of the community.

All of these elements came into play for the Tampa Bay RHIO, which was selected by Florida's Agency for Health Care Administration (AHCA) and the U.S. Department of Defense (DoD) to take the lead technical role in a pilot project for an interoperable network for sharing electronic medical information. When completed, Florida healthcare providers who treat current and former military personnel and their families will be able to electronically access and exchange personal health information about their patients held by the DoD via an interface with the Military Health System's EHR developed by Tampa Bay RHIO.¹¹⁶

Ultimately, the end goal of any funding application and business model development is to achieve long-term stability and success. While their numbers may not be large, there are examples of successful HIEs, all sharing the common element of a solid, effective business model that can sustain the initiative throughout future challenges.

“A solid grasp of the market factors influencing the HIE service and a constant monitoring of the competitive landscape are essential to success. More enablers and/or more barriers may surface at any time, and the ability to react and adjust the HIE service's business model may be necessary to sustain success.”¹¹⁷

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Achieving Expectations: Negotiating and Executing Effective Vendor Contracts

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"Leaders of early efforts all report having to deal with a wide range of viewpoints and varying amounts of initial trust. Complex consents, security controls, and acceptable data management practices all must be agreed upon before anything can move forward."¹¹⁸

Properly negotiated and executed health information exchange (HIE) contracts can mean the difference between a financially sustainable initiative and one challenged by red ink and missed deadlines. Without the appropriate contracts in place, there is no assurance that implementations will be completed in a timely manner, which can hinder the exchange's ability to progress to data sharing.

Formal agreements governing everything from deliverables and data access to participation do more than engineer compliance, however. They also serve to clarify expectations and divide accountability equally among stakeholders and participants.

Multiple Agreements Required

Because they are based on the sharing of patient and provider information, HIE's face a number of key legal challenges that must be addressed in the form of multiple policies, agreements and contracts. These include:

- **Privacy & Security Policies:** Ensuring a high level of information privacy and security within the HIE, the initiative must establish formal Privacy & Security Policies that are then integrated into everyday processes and work routines of the staffs at all participating facilities.
- **Business Associate Agreements:** Required by HIPAA, Business Associate Agreements (also referred to as Business Associate Contracts or Business Associate Arrangements) are primarily designed to document assurances that the business associates of covered entities will safeguard health information.¹¹⁹
- **Data Sharing Agreements:** Often the most difficult and time-consuming to execute because of provider concerns that sharing data may result in the loss of patients to competitors, Data Sharing Agreements (also called License Agreements or Data Distribution Agreements) cover a broad range of critical issues, including which data will be shared, when and how, as well as any prohibitions. Most generally prohibit data recipients from sharing it with others and spell out the specific purposes for which data will be shared.¹²⁰

¹¹⁸ First Consulting Group. "Overcoming Ten Non-Technical Challenges of RHIOs: Executive Insights." 2006.

¹¹⁹ Dimitropoulos, Linda L. "Privacy and Security Solutions for Interoperable Health Information Exchange: Final Implementation Plans, Executive Summary." Prepared for the Agency for Healthcare Research and Quality and the Office of the National Coordinator. RTI International. June 30, 2007. Available at http://www.rti.org/pubs/fip_execsumm.pdf

¹²⁰ FCG. 2006.

- *Participation Agreements*: Designed to ensure that participants comply with the HIE's policies and procedures, Participation Agreements spell out the terms of the relationship, including the roles, rights and responsibility of each party as they pertain to the initiative.¹²¹
- *Vendor Software Licenses*: A legal agreement between the HIE and the software publisher or vendor, Vendor Software Licenses spell out how the initiative can and cannot utilize software, including pricing models, the number of users or installations, etc.

Though not legal agreements, there are two additional documents worth noting that govern the procurement of technology. The first is a Request for Information (RFI), which is used to request information from vendors to ascertain whether or not necessary technology solutions are available in the market. The second is a Request for Proposal (RFP), which invites vendors to submit a bid for hardware, software and/or services.¹²²

An exemplary resource for the many contracts and agreements required to get an HIE started on the right legal footing is the Health Information Exchange Toolkit from CalRHIO, developed under a grant from the Blue Shield of California Foundation.

Designed for use across the safety net community, including providers, consortia staff, organizational IT staff and others, the toolkit includes contract and agreement templates covering a wide range of needs, all of which can be modified based on an initiative's unique situation.

Tapping into resources like the Toolkit can help exchanges avoid the need to "recreate the wheel" and to reduce the costs associated with starting an HIE.¹²³

Locking Down Vendor Contracts

Selecting the right vendor and negotiating iron-clad, comprehensive contracts is crucial to any clinical information exchange's short- and long-term success. The best starting point is to have a solid understanding of the technology solutions available within the HIE and its participating facilities. Once the existing capabilities have been established, consensus must be reached by all participants on the technical principles, policies and procedures that the initiative deploys to achieve its vision of enabling secure electronic communication between any authorized and authenticated participants in the HIE.

Bear in mind that the technical standards will affect all participants. However, they can be particularly problematic for those facilities with legacy systems if they cannot be modified to meet the agreed-upon requirements. As such, the goal should be to identify standards that require minimal changes to existing systems while still achieving the appropriate levels of security, functionality and interoperability.

"Sufficiently robust standards are currently available today to support the migration to such an interoperable healthcare information network. However, to implement this goal for ubiquitous interoperability, all participants to the HIE must agree to adhere to certain technical standards at a level of detail not often found today in the ANSI accredited consensus standards themselves."¹²⁴

Once standards have been established, it is time to identify the solutions that meet the initiative's needs. Using the RFI, look first for pre-built solutions that require minimal configuration on the part of the HIE and its participants. The challenge here is that many vendors have not been historically compelled to offer out-of-the-box interoperability because they receive revenue from integration of services. As such, it may be necessary to customize an existing vendor solution, which can be time-consuming, or to have a custom solution built to specification.¹²⁵

¹²¹ CalRHIO Safety Net Health Information Exchange Toolkit. "HIE Legal Agreement Templates." Available at <http://www.calrhio.org/?cridx=414>

¹²² CalRHIO Safety Net Health Information Exchange Toolkit. "HIE Program: Technology Procurement." Available at <http://www.calrhio.org/?cridx=412>

¹²³ CalRHIO HIE Toolkit.

¹²⁴ eHealth Initiative. "Connecting Communities Toolkit: Technology Module." Available at <http://toolkit.ehealthinitiative.org/technology/default.msp>

¹²⁵ Satterfield, Brian. "Nine Tips for Navigating the RFP Research Phase: Take the pain out of finding potential vendors." TechSoup. June 27, 2006. Available at <http://www.techsoup.org/learningcenter/techplan/page5517.cfm>

For NYCLIX, Inc., a New York City-based RHIO, the right match turned out to be a pre-built solution. A key consideration was identifying a vendor capable of supporting the mandatory requirements established by the initiative, which includes the largest hospitals in Manhattan and hospitals in Staten Island, Brooklyn, and Queens, a major faculty practice organization, a multi-site Federally Qualified Health Center and the nation's largest not-for-profit home healthcare provider.

"After a comprehensive analysis, the product and related services were selected because they provide proven solutions that can support the mandatory requirements of our RHIO, including a federated architecture, where NYCLIX servers will be placed behind the firewalls of each member," said Paul Conocenti, Chair of the NYCLIX Technical Committee and Senior Vice-President, Vice-Dean, and Chief Information Officer at New York University Medical Center. "[It] also meets our privacy and confidentiality needs with a strong technical security system that supports the complexity of the consenting process."¹²⁶

A mixed solution was the best fit for Inland Northwest Health Services (INHS), a not-for-profit corporation formed in 1994 by four Spokane, Wash., hospitals that now supplies outsourced IT to 38 hospitals and more than 1,000 office-based physicians in Idaho, Washington and California. Meditech provides the initiative's enterprise hospital IT system, and INHS then works with a range of software products for its provider clients.

Notes INHS CEO Thomas Fritz: "Anytime you're just using a single (vendor), you're going to have limitations because they don't have all the products...No matter where you are, you're going to have multiple vendors. We're hoping with the setting of interoperability standards, you'll be able to use multiple vendors easier."¹²⁷

Once all the options have been weighed and the potential vendors identified, it is time to solicit proposals. A carefully designed RFP can aid in identifying the best candidates to provide the technology based on key criteria, including:

- Core application services
- Clinical application services
- Infrastructure & Integration services
- Architecture
- System capabilities
- Product and Project development, management, and governance
- Deployment/implementation
- Pricing structure¹²⁸
- Training and support
- Vendor business model
- References / Qualifications / Staff resumes

The RFP may also reveal some unexpected costs, such as a vendor's policy to charge for travel time for training and technical staff—charges that may be negotiable if known about in advance. However, it is important that the HIE leadership understand its limitations. Unless they are very experienced at negotiations, it may be best to bring in a seasoned professional such as an attorney or consultant.

Other tips to level the playing field when it comes to negotiations are:

- *Narrow the field to two vendors:* The finalists should be equally acceptable and should be informed that they are competing primarily on price and terms.
- *Don't tip your hand:* Do not let a vendor know that it is favored or the only one being considered as it may reduce their incentive to work with the HIE on price or terms.

¹²⁶ NYCLIX press release. "NYCLIX Selects FirstGateways to Build Regional Health Information Exchange Infrastructure in New York City." August 27, 2007. Available at <http://www.nyclix.org/news-First%20Gateways.html>

¹²⁷ Conn, Joseph. "One vendor at the core: Will rare breed of RHIO ever become dominant?" Modern Healthcare. January 8, 2007. Available at <http://www.modernhealthcare.com/apps/pbcs.dll/article?AID=/20070108/FREE/70108002/0/FrontPage>

¹²⁸ CalRHIO Safety Net Health Information Exchange Toolkit

- *Buy the right-sized system:* Avoid getting “shoehorned” into a system that does not meet the initiative’s needs, which will only result in additional costs down the road for upgrades.
- *Use payments as leverage:* Tie payments to set performance milestones, but be sure to understand what the HIE’s responsibilities are in meeting those milestones. Set clear acceptance criteria.
- *Negotiate payment terms:* It is often possible to negotiate payment terms for support fees, such as 30 days after receipt of the invoice versus 30 days from the date of the invoice. The final contract should also establish that any disputed charges will be exempt from interest payments until a resolution is reached. Include dispute resolution procedures.
- *Anticipate future needs:* To accommodate anticipated growth, include license fees for additional seats in whatever volume discount is negotiated as part of the initial agreement. Be sure that any software source code is placed in escrow and that the HIE has the right to recruit the vendor’s technical staff to support the product if the company goes out of business or is acquired.
- *Do some homework:* Talk with other HIEs that have worked with the vendors under consideration to any sticking points. For example, if a vendor is known to be rigid about service pricing, try to offset it with concessions in other areas.
- *Plan for problems:* Include compensation for problems such as excessive downtime. Be specific as to what circumstances warrant remedies and reasonable in the amount of compensation requested.
- *Avoid automatic renewal clauses:* Some vendors include clauses that automatically extend service agreements if the vendor is not notified by a certain date, which can easily result in paying for a service that is no longer needed.
- *Don’t wait to negotiate:* Include key contract clauses in the RFP to secure vendor agreement early in the sales process, before negotiations have even started. Also, begin getting price concessions early when the vendor is still fighting to become a finalist.
- *Time the process:* Often, vendors are most concerned with closing deals just before the end of the quarter or fiscal year when earnings are reported to shareholders.
- *Review the contract:* The contract you review should be in readable type with no small print to ensure that no important clauses are overlooked. Some purchasers use their own contracts, including them in the RFP and requiring vendors to indicate whether they accept or reject each clause.¹²⁹

SLAs to Ensure Expectations, Deadlines are Met

To ensure that the HIE timeline and stakeholder expectations are met, contracts should establish clearly defined service level agreements (SLAs) that are tied to previously defined benchmarks and milestones, such as interoperability, data exchange, security and standards.

The SLA should cover and define all aspects of service level expectations for both the HIE and the vendor. The eHealth Initiative identifies the key elements to be included in an SLA as:

- *Compliance:* A documented track record of how well the vendor is meeting customer support commitments.
- *Customer Responsibilities and Duties:* The steps the customer needs to take to ensure that the vendor has all the information needed to resolve an issue.
- *Methods of Support:* How issues will be communicated (i.e. email, phone, online chat) and resolved. In some cases, remote diagnostics are available, eliminating the need for on-site support.
- *Hours of Support:* The hours during which support will be available to customers.
- *Problem Escalation & Triage:* The mechanism that defines how a problem migrates through the support system and the different resources that get involved along the way. If a problem can’t be resolved in a certain amount of time, then it escalates until it is resolved.
- *Response Times:* There should be a schedule of response times for different types of problems, and the service level agreement should define this accountability.

¹²⁹ Online Consultant Software. 2003.

- *Severity/Priority Classification:* The severity level of a problem is usually noted when a support ticket is opened up, with resolution guarantees based on severity.¹³⁰

Tap Every Resource

When identifying vendors and negotiating contracts, take advantage of group purchasing opportunities or economies of scale that may be available to the HIE by leveraging the buying power of stakeholders, partnerships and alliances. Large partners used to working within a health information exchange environment and local stakeholders may also be able to improve the initiative's negotiating position.

Finally, tap into the tools and resources that already exist to assist with setting standards, selecting technology vendors and negotiating contracts, such as those available through CalRHIO, the Certification Commission for Healthcare Information Technology (CCHIT), eHealth Initiative, and HIMSS EHRVA.

¹³⁰ eHealth Initiative. "Connecting Communities Toolkit: Glossary." Available at <http://toolkit.ehealthinitiative.org/glossary/>

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New Haven: Scanning the Environment to Capitalize on Emerging Opportunities

Gary Davidson

Gary Davidson is CIO of the Hospital of Saint Raphael.

In January 2007, New Haven, Conn. received a \$3 million grant from the Center for Community Health Leadership to help the city create a community-wide health information exchange (HIE) to support the exchange of data with community physicians.

Saint Raphael Health System, which championed the grant application, is hosting the technology that will facilitate data sharing across the exchange. Ultimately, the network will touch 22 counties and approximately 800,000 patients in the greater New Haven area. Saint Raphael will serve as the cornerstone of the initiative, establishing a community pilot for a larger, statewide effort that is already underway via eHealth Connecticut.

From the beginning, it was clear that long-term success would depend upon the initiative's ability to overcome several key challenges, most dominantly a low adoption of electronic health records (EHRs) among the physician groups that are expected to participate in the HIE. The majority of the state's physicians groups are small and independent; none of the approximately 30-40 small practices impacted by the HIE had EHRs before the beginning of the project, and less than 10 percent of healthcare delivery organizations in the New Haven region have true electronic medical records systems.¹³¹

The work done by Saint Raphael Health System and its partners leading up to the successful grant application, in particular identifying existing and prospective resources to strengthen the reach and effectiveness of the area's commitment to health information exchange, is an excellent demonstration of the best practice recommendations conveyed in previous chapters of the "Best Practices Guide to Community Health Information Exchange."

Assessing the Environment

New Haven's initiative began by assessing the environment that accounts for political, social and economic interests within the community the data sharing initiative will serve. The goal of this exercise was to both gain a comprehensive understanding of the stakeholder, participant and community resources that can be available to the HIE and to understand the community's topography to ensure that those resources could be leveraged to the benefit of all stakeholders.

Conducting an assessment to better-understand the environment is important to establishing the community links necessary to move the initiative forward. An environmental assessment also allows identification of the most effective incentives for winning over opponents and keeping stakeholders involved and active.

This is critical because fighting or ignoring the political, social and economic pressures and priorities that characterize the community environment is very likely to result in a failure to fully leverage available resources to the long-term detriment of the initiative.

¹³¹ Enrado, Patty. "New Haven Lands Grant to Link Healthcare Data." Healthcare IT News. February 1, 2007. Available at <http://www.healthcareitnews.com/story.cms?id=6397>

When properly conducted, the environmental assessment will lead to the accommodation of stakeholder concerns and values, which is key to aligning and maximizing existing and prospective resources, strengthening consensus and finding the focus necessary to move the message from “do you want to do this” to “it’s clear you need to get on-board.”

In a nutshell, environmental scanning assesses the internal strengths and weaknesses of an organization in relation to the external opportunities and threats it faces. For an HIE, typical focal points for the scan are competition, technology, regulatory activity and the economy.¹³²

The general steps for conducting an environmental scan are:

- Identify the purpose, participants and time commitments
- Carry out the scanning activities
- Analyze and interpret the strategic importance of issues and trends
- Select issues and trends for further action
- Report and disseminate the results

Scanning efforts include

- Deliberate gathering of through research studies
- Informal conversations with stakeholders, community leaders, etc.
- Reviewing newspapers, magazines and journals
- Monitoring demographic data; and
- Benchmarking initiatives

An environmental scan will always include continual and predictable events that require constant surveillance, such as competitors in the industry, products and product development, regulations, new technologies and economic and social conditions, as well as one-time events such as elections. Ultimately, events and topics selected for an environmental scan will be most effective if they relate closely to what the community and HIE stakeholders have defined as critical success factors.¹³³

In New Haven, securing the participation of key stakeholders in the community such as Yale-New Haven Hospital (YNHH), Fair Haven Community Health Center and Hill Health Center within the health information exchange is an excellent example of the importance of continuous environmental scanning to an initiative’s ability to fully understand the strengths and needs of the community’s key players, thus making it possible to focus on the most important battles first.

Due to the competitive relationship between Saint Raphael and Yale-New Haven Hospital, participation by the latter was not something the initiative’s leadership expected to happen. However, as the interest of other HIE stakeholders began to strengthen Saint Raphael was asked a lot about YNHH’s participation as was YNHH asked about their interest and participation in the HIE and suddenly the community collaboration and sharing opportunity expanded.

Working together and sharing among competitors is difficult but possible especially if one is listening and looking for opportunities to open discussions and engage in collaboration. Because ongoing environmental scanning was a HIE priority, the initiative leadership quickly became aware of other key stakeholder’s unexpected interest and was able to work with these organizations to overcome the barriers. This was accomplished in large part through the establishment of a neutral foundation that removes proprietary interests so that the main focus can be on improving relations between the regional competitors. This, in turn, encourages their ongoing support of and participation in the initiative.

Targeted Value Creation

Another important strategy in New Haven was to maximize its available resources and follow up the environmental assessment with targeted value creation designed to broaden its pool of participants--a process that will continue throughout the life of the initiative.

¹³² Abels, Eileen. “Why Is Environmental Scanning Important?” Bulletin of the American Society for Information Science and Technology. Feb/March 2002. Vol. 28, No. 3. Available at <http://www.asis.org/Bulletin/Mar-02/abels.html>

¹³³ Abels, Eileen. Feb/March 2002

For example, one of the lessons learned during the assessment was that maintaining the engagement and participation of provider stakeholders would require that the initiative find ways to create immediate value. Because physicians are a population not always known for their patience, it was important to show value from day one, which for New Haven meant starting on the hospital side with the electronic exchange of lab results.

At the same time, however, project leaders were aware that the focus could not be so narrow as to slow momentum in other areas the initiative had established as priorities with physicians and other provider stakeholders.

As noted in the results from a roundtable discussion convened by the National Institute for Health Care Management Foundation: "The tension between creating short-term and long-term value through HIE is another dimension to stakeholder value clash. RHIO functions that provide short-term return on investment (ROI) through administrative data exchange and improved results delivery may be of greater value to some stakeholders than long-term quality improvement through enhanced outcomes, patient safety, and even expanded access to care. Balancing this tension among different stakeholders to ultimately benefit all stakeholders is key to broad stakeholder participation."¹³⁴

For example, regardless of the speed and volume at which lab results are exchanged, if physician participants use the local patient clinical information look-up tool in the beginning phases and are unable to find patient records several times in a row, they will fail to see the value of continuing their participation in the HIE. Focusing only on long-term goals and not building incremental value in the minds of the stakeholders will weaken the initiative's ability to achieve its objectives of connecting the entire provider community.

The solution for New Haven was to handle the organizational efforts in a way that balanced the interests of all the subsets of the provider stakeholder group. At the same time, it was important to establish stakeholder values that allow for future growth. The key here was to align incentives in a way that ensured broad acceptance and long-term support.

For example, imaging was one area that held great potential for cost savings among key New Haven stakeholder groups. Establishing imaging as the primary focus in Phase II of the initiative will ultimately allow the broader health information exchange and its participants to benefit from private and public payer incentives, and maintain the support and interest of stakeholders who do not benefit as much in the short-term from the Phase I focus on lab results.

New Haven also continues to review its community values to address current and future shifts in stakeholder priorities. This is critical, because community values do not always mesh with stakeholder values, in particular as they pertain to the HIE's ability to generate revenues.

For example, health plans and employers are often hesitant to invest in clinical information exchange projects in any significant capacity without seeing reductions in waste through the elimination of duplicative therapies or testing. Further, even purchaser-driven initiatives have struggled to engage providers without the ability to show how the HIE will enhance the practice at the point of care through improved access to hospital and imaging data and administrative savings.

Notes Bruce Bradley, director of healthcare strategy and public policy at General Motors: "We struggle a lot with the value proposition because we're often asked to make investments in our communities, particularly in this area. A way to think about it that resonates with purchasers, in particular manufacturing-type purchasers, is the whole concept of waste. What can [HIEs] do about waste?"¹³⁵

¹³⁴ Malepati, Sarath; Kushner, Kathryn; Lee, Jason S.. "RHIOs and the Value Proposition: Value Is in the Eye of the Beholder." *Journal of AHIMA* 78, no.3 (March 2007): 24-29. Available online at http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_033607.hcsp?dDocName=bok1_033607#participants

¹³⁵ *Journal of AHIMA*. (March 2007).

Tapping into Best Practices

New Haven has also made a concerted effort to take advantage of the experiences of other communities that have gone through the process of establishing a working health information exchange initiative. The best practices that have emerged from these previous efforts will continue to be an essential external resource as the initiative continues moving forward toward its objectives.

Lessons learned from other sites have provided New Haven with a set of guidelines for navigating issues and for developing viable alternative solutions when roadblocks have been raised. Among the external resources the initiative's leadership has tapped include sessions on HIE and regional health information organization (RHIO) development and management at key trade conferences such as the Healthcare Information and Management Systems Society (HIMSS), as well as other communities that utilize the same software applications as New Haven and other vendor application user groups.

These conversations are invaluable for the ideas and solutions they generate, as long as they pass the "pressure test" with the initiative's knowledge of the community it is designed to serve.

Another strategy developed based on these best practices, one New Haven found to be particularly advantageous, is to bring in a neutral facilitator with a deep understanding of the national HIE landscape and expertise gained from working with other initiatives to help keep the process moving forward. Dialogues with other communities made it clear that New Haven needed someone that did not have a stake in the community and with no "skin in the game" to step in when progress stalled and to diffuse potentially disruptive situations quickly and effectively.

Early on New Haven worked with SMC Partners, LLC, a consulting company who has been working with the e-health Connecticut's board to drive the adoption of HIE's across Connecticut, to bring impartiality to the collaboration discussions. This proved to be a valuable relationship in the early stages as it provided insight into what other connected communities were doing.

Staying Alert to Opportunities

When all is said and done, long-term success for New Haven will come from its leadership's ability to utilize the resources at hand, and a commitment to continue assessing the environment to identify and capitalize on opportunities and resources that present themselves in the future.

These may come from inside the initiative, from within the community, or from outside organizations or stakeholders that perhaps were not present in the early days of New Haven's formation. The key is to be aware of any changes in the political, social and economic environment of the community and to seek ways to continuously expand and strengthen stakeholder participation and value.

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Proving Tangible ROI to Secure, Maintain and Expand HIE Support

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The ability to measure success and the return on stakeholder and community investment is a critical means to ensure continual, long-term support for a health information exchange (HIE) initiative among its stakeholders.

The process would seem to be fairly straight-forward. The devil, however, is in the details.

It starts with the creation of a baseline to serve as an anchor point for comparative success, both within individual participating organizations and across the community as a whole. That is followed with the establishment of a formal review process that measures results from the clinical, financial and social perspectives. Then, a commitment from participating providers needs to be secured to begin gathering and sharing data from day one.

The best set of measures in this process will be one that captures value from the perspective of *all* constituencies across the community. Because a wide variety of stakeholder groups stand to benefit from the exchange of health information, including patients, physicians, hospitals, home care agencies, federally-qualified health centers, payers, employers, public government, etc., tracking the value for each ensures that no one group feels left out or disenfranchised.

Asking all stakeholders to define success from their unique perspective and addressing their responses is critical. Ideas can be sparked by examples from other communities, but the measures ultimately must be those that all local constituents agree are most important for the community and are therefore worth the effort it will take to realize the anticipated value.

Identify Objective Measures

Often, the most easily identified baseline measures are subjective: what is meant by improving healthcare? Objective measures of tangible results are also important, however, if the initiative is to effectively convey success and return on stakeholder and community investment.

The trick is to identify those objective metrics that correlate to the subjective improvements the HIE is attempting to achieve, then to secure consensus among all stakeholder groups on precisely what will be measured and how:

- The degree of adoption could be measured by the number of people opting in and the number of providers connecting to the HIE.
- Impact on quality and safety could be measured by the number of duplicate medications prescribed.
- Impact on cost and quality could be measured by the number of duplicate procedures performed or the number of readmissions.

- The impact on access and efficiency could be measured by the number of prescription refills requested online.¹³⁶
- Patient convenience could be measured in relation to wait times, repetition of documentation, or inter-provider transfers.
- Safety could be measured in drops in the need for office visits, declines in the number of deaths per capita, reduced medication errors, etc.

Each metric should have a clearly defined purpose, as well as:

- Numerator and denominator
- Inclusion, exclusion and assumption
- Data source
- Reporting frequency
- Target or goal

For longitudinal comparisons, ensure that data is collected from consistent sources and with consistent methodologies, and that metrics are reproducible.¹³⁷

National statistics can be helpful when establishing performance baselines and can be an interesting data point. For example, the Joint Commission is in the process of compiling a performance measures library to provide stakeholders with ready access to reliable, tested and evidenced-based measures that can be used to improve the safety and quality of healthcare.¹³⁸

In fact, the Commission provides an informative summary of the major initiatives that focus on physician and hospital performance, including the Centers for Medicare and Medicaid Services' Doctor's Office Quality Project and the Doctor's Office Quality Information Technology (DOQ-IT) Project, the American College of Surgeons National Surgical Quality Improvement Program, the American Medical Association's Physician Consortium for Performance Improvement, the Ambulatory Care Quality Alliance, the CAHPS Hospital Survey, Surgical Care Improvement Project and the Leapfrog Group.¹³⁹

However, while these national initiatives can be useful as guides, it is far more relevant if the community-based initiative utilizes locally-specific trending as its guide. That was the course followed by the New Mexico Telehealth and Health Information Technology when it determined that the best baselines for initial performance measures were the number of participating sites, the number of sites that are serving patients, the number of patient encounters, the number of medical services provided and the number of hours of training and consulting. Plans also called for the addition of a sixth measure for children with disabilities.

Other areas the New Mexico initiative identified as prospects for tracking were:

- Management of chronic disease and reduction of these diseases, which could be measured by using a control group for comparison of patients treated face to face to patients treated via telehealth
- The age at which autism is diagnosed and the age at which mental services are used
- Quality of care and cost reductions, including travel time and costs to rural areas
- Avoidance of urgent care and hospitalization by measuring and addressing homecare and preventative medicine processes

In a report to the commission overseeing the New Mexico initiative, Commissioner Bob Mayer noted that it was important "to look at what makes sense for the State of New Mexico. There are several

¹³⁶ Georgiou, Archelle. "Center for Community Health Leadership Recommendations for Metrics." Presentation to CCHL advisory board.

¹³⁷ Georgiou, Archelle

¹³⁸ The Joint Commission. "Measure Reserve Library." Available online at <http://www.jointcommission.org/Library/ZMeasureLibrary/default.htm>.

¹³⁹ The Joint Commission. "Health Care Performance Measurement Initiatives." Available online at http://www.jointcommission.org/Physicians/md_pi.htm.

organizations with similar missions. We need to collaborate and discuss what each organization can contribute.”¹⁴⁰

In addition to ensuring that measures are applicable to local stakeholders and the community, extreme care must be taken when determining what, if any, incentives may be applied when performance or other measures are achieved or exceeded as this typically dictates what gets done; as is often said, “what gets measured gets done.”

It is also very important to give due consideration to any unintended consequences that may be created through the interaction of measures. It may be necessary to refine the metrics to ensure the true performance is taken into consideration.

For example, many physicians say they are opposed to implementing electronic health records (EHR) because it will slow down workflow and reduce the number of patients they can see in one day. However, EHR can result in much higher quality visits, lower collateral costs, and higher reimbursement rates as exams are more properly coded. Thus, measures might be tuned to focus on optimizing patient visits rather than simply increasing the volume of patients seen.

Measure Performance across the Continuum

When determining what best demonstrates success, it is important to focus on a range of metrics to ensure the full ROI is captured and communicated with stakeholders. Some suggestions include:

- Cost of care
- Patient experience
- Waiting lists
- Administrative costs within area organizations
- Duplication of services
- Preventive care or procedure tracking throughout the continuum
- Quality

Once the “what” has been established, the next step is to determine the “how.” Again, the key is to identify measures that apply to the local community.

For the vast majority of HIEs, the ultimate goal is achieving the lowest cost per patient while still providing the best available care. However, this presents a unique challenge in terms of measuring performance because there is typically no single database of costs outside the payers and no consolidated source of information on the quality of care being delivered.

While a fully integrated HIE, including personal health record (PHR) adoption by local residents, could automate the compilation of comprehensive cost information from payer and provider stakeholders, the question is how to measure outcomes in advance of the creation of that database.

The answer may be for the community to make a concerted effort to generate support from the area’s key payers as a source of data to measure cost savings. That may also help overcome the challenge of identifying which stakeholders are responsible for providing cost information, and the sensitivity to sharing that information for fear of “shopping” for care based on price.

To that end, it is important to ensure that adequate attention is paid to tracking quality improvements against which cost savings are measured. These can run the gamut from fewer duplicate tests, reductions in medication errors to an overall improvement in the general patient experience.

Although not a community-based initiative, the Institute for Healthcare Improvement’s 5 Million Lives Campaign is an excellent example of the adoption quality improvement strategies. The Institute has

¹⁴⁰ New Mexico Telehealth and Health Information Technology. “Commission Minutes.” September 20, 2007. Available online at http://www.health.state.nm.us/telehealth_commission/pdf/THC%20Minutes%20092007.pdf.

identified 12 specific areas for improvement, all involving the implementation of research-based guidelines and strategies. These include:

- Preventing methicillin-resistant staph infections
- Reducing harm from “high-alert” medications, starting with anticoagulants, sedatives, narcotics and insulin
- Preventing adverse drug events
- Reducing surgical complications by implementing changes recommended by another major national initiative, the Surgical Care Improvement Project
- Preventing central line infections
- Preventing surgical-site infections
- Preventing ventilator-associated pneumonia
- Reducing pressure ulcers
- Delivering reliable, evidence-based care for congestive heart failure
- Delivering reliable, evidence-based care for heart attacks
- Deploying “rapid-response teams” at the first sign of a patient’s decline
- Engaging hospitals’ boards of directors and senior executives in the quality improvement effort

The Institute is measuring two things:

1. The number of acute care inpatient deaths that we would expect to occur in the Campaign but did not, because of improvements in care (“Lives Saved”)
2. The number of incidents of medical harm that we would expect to occur in the Campaign period but did not, because of improvements in care (“Harm Avoided”)

The “lives saved” data is collected through direct submission of acute-care inpatient mortality data from participating hospitals, while the “harm avoided” data is collected by conducting retrospective chart review in a representative sample of participating facilities.

Participating facilities are also provided with detailed information, including suggested intervention strategies, and provided with detailed process and outcome measure information and data collection tools to ensure consistency.

By securing agreement from each participating facility to not only implement quality improvement measures, but to also collect and report data in a consistent manner, the Institute will be able to initiate a full accounting of the true impact quality improvement strategies had on the number of lives saved and instances of harm avoided.

Value is another measure that may present some unique challenges in terms of gaining stakeholder agreement on what constitutes success. What is generating that value? Where are the savings coming from and what are the consequences of those savings across the care continuum?

According to the National Institute for Health Care Management Foundation, one stakeholder’s value may be competitively threatening to another, making collaboration undesirable. Greater data sharing, for instance, could lead to reductions in redundant testing and imaging. While the resultant savings would benefit payers and employers, they negatively impact revenues of laboratories, hospitals and imaging centers and certain specialists.¹⁴¹

So the challenge is how to measure the value derived from the initiative while taking into consideration the concerns of those that stand to lose revenues from doing so.

Notes Carolyn Clancy, director of AHRQ: “How are we going to get to a place where...people can actually see and understand the value added of being able to exchange health information, even as they understand all too clearly the threats to the current way that they think about doing business?”¹⁴²

¹⁴¹ Malepati, Sarath; Kushner, Kathryn; Lee, Jason S.. “RHIOs and the Value Proposition: Value Is in the Eye of the Beholder.” *Journal of AHIMA* 78, no.3 (March 2007): 24-29. Available online at http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_033607.hcsp?dDocName=bok1_033607#participants

¹⁴² Roop, Elizabeth S. “Hospitals Leery of Funding Information Exchanges, Seek Assurances.” *Hospitals & Health Networks*. May 2007. Available at

Particularly in the early stages, one approach is to measure value not in direct cost savings, but rather in adoption and usability, such as the volume of data exchanged, number of providers engaged, number of patient records available across the initiative, number of times data is accessed in a set period and by other means.

All of these factors demonstrate the value placed on the initiative by participants through their use of the health information exchange initiative. It allows stakeholders to work together, rather than in competition or in silos, to define value that is meaningful to all rather and to produce the greatest ROI.

Consider Stakeholder Needs

Whatever approach is ultimately taken to measure success and the return on stakeholder and community investment, it must take into consideration the needs of all stakeholders to ensure their continuous support of the HIE at the appropriate levels.

Tangible measures of quality and other care improvements, as well as financial sustainability and success are key to maintaining stakeholder involvement, so metrics surrounding these goals must be carefully evaluated and identified. A determination must be made about which metrics actually matter to stakeholders.

The initiative must also proceed with caution. Accomplishing the task of maintaining stakeholder involvement requires striking a delicate balance between the needs and objectives of the community and the needs and objectives of the stakeholder.

By establishing mutually agreed upon and clearly defined performance measures and issuing regular updates, stakeholders can monitor progress and will not feel left in the dark.

The reality is that even if stakeholders do not overtly act on the information every time, they are acting on it subliminally. Keep them informed and demonstrate success to ensure they don't "feel the heat" and jump out of the HIE pan.

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Afterword

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The path to building a successful, sustainable community health information exchange (HIE) is long and fraught with roadblocks, any one of which can threaten the short- and long-term viability of these promising initiatives.

But it can be – and has been – done. Communities have demonstrated that collaboration, strong leadership and the ability to achieve meaningful value for the community, stakeholders and participants are the critical elements for success.

With *Best Practices for Community Health Information Exchange*, the Center for Community Health Leadership has created a guide for the establishment of community-based data exchange. By following the blueprint laid out in these pages, communities can establish a solid foundation for achieving a sustainable HIE capable of providing demonstrable returns and accommodating the diverse needs of multiple stakeholders.

Much of what we have shared is based upon the experiences of those who have already ventured down this path. Some have succeeded; others have failed. But all have contributed to a growing base of knowledge from which others can draw as they make their own way down the path toward community HIE.

Best Practices for Community Health Information Exchange is only the beginning. The mission of the Center for Community Health Leadership is to facilitate the development of health information pathways by helping to build connected, prepared and responsible communities. We intend to accomplish this by expanding our thought leadership series, continuously updating the body of knowledge communities can tap as they prepare to navigate their own paths toward sustainable, successful HIEs.

By encouraging collaboration and building upon the shared experiences of those communities that have gone before, the Center will provide communities with the tools they need to transform their health systems in the most meaningful ways.

